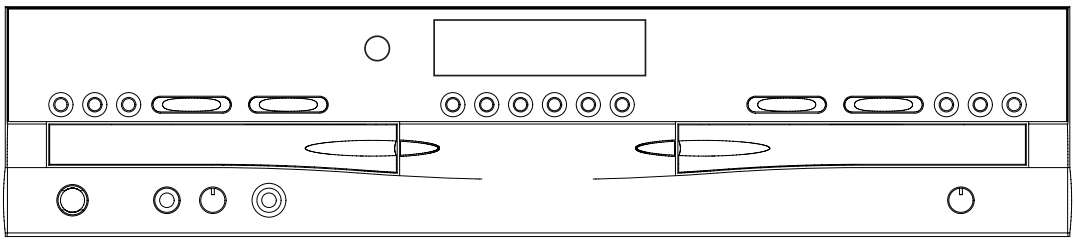
The Harman Kardon Model CDR2

Dual-Tray CD-R/CD-RW Recorder/Player

Technical Manual



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SPECIFICATIONS

Signal Format

Playback Sampling Frequency	44.1 kHz
D/A Conversion	96kHz, Multi-Bit Delta-Sigma Conversion
Oversampling	128 Times

Playback Specifications

Frequency Response	2Hz – 20,050Hz
Playback S/N	105dB
Playback Dynamic Range	105dB
Playback THD	0.005% / –88dB
Analog Audio Output	2V RMS, ± 2dB
Digital-Coaxial Output	0.5 Vpp/75Ω
Headphone Output	1V RMS/32Ω Load

Record Specifications

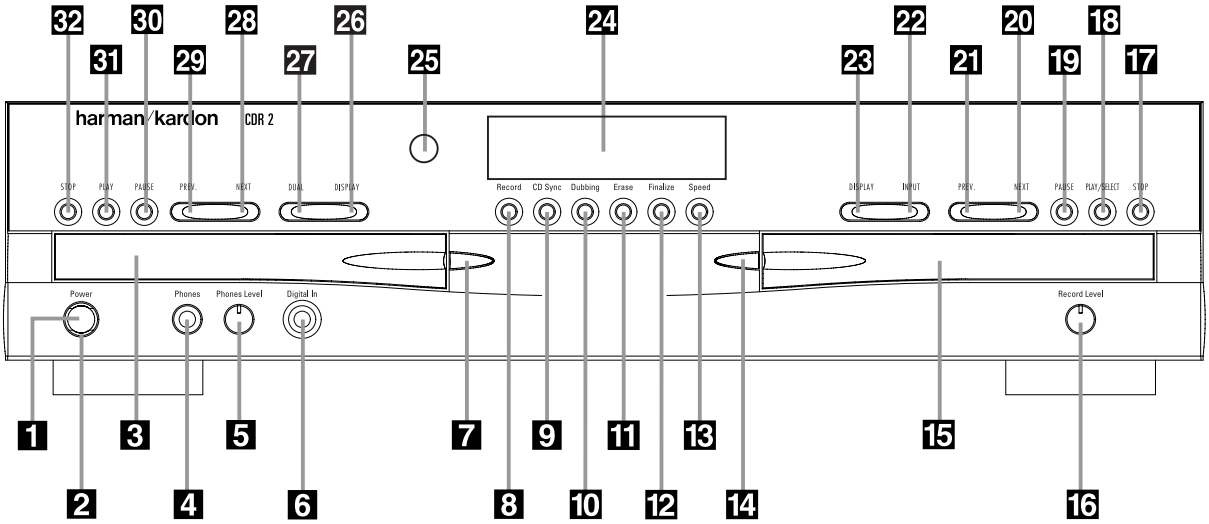
Digital Input Sample Rates	32kHz – 96kHz
Recording S/N: Analog	91dB
Recording S/N: Digital Dub Mode	Equal to Source
Recording S/N: Digital External Source	Source –10dB
Recording Dynamic Range	91dB
Recording THD	0.005% / –85dB
Analog Input Sensitivity	330 mV RMS 47kΩ = 0dB
Digital Inputs (Direct Recording)	44.1kHz, ±100 ppm/min.

General

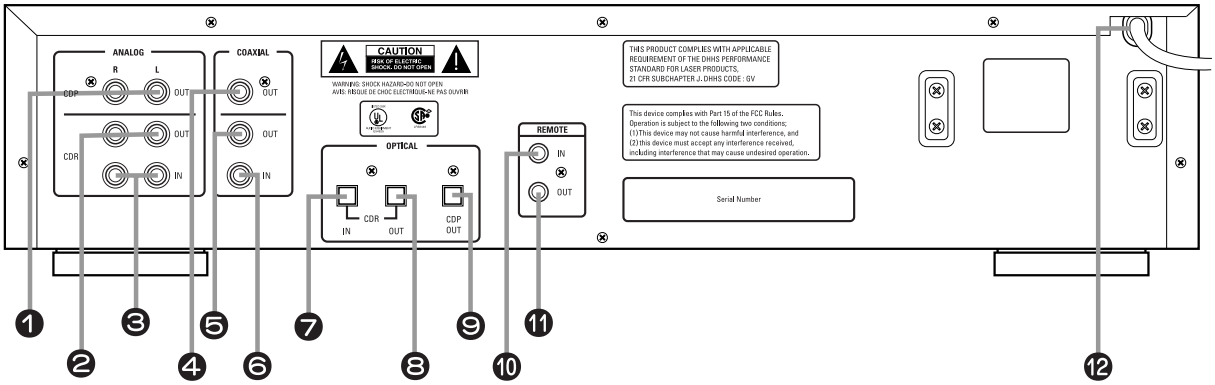
Power Requirement	120VAC/60Hz
Power Consumption	48 Watts
Dimensions	
Width	17.3"/440mm
Height	4.4"/112mm
Depth	14.2"/363mm
Weight	13.2 lb/6 kg

COMPONENTS AND THEIR FUNCTIONS

● FRONT PANEL



● REAR PANEL



❶ Play (CDP)-Deck Analog Output
❷ ecord (CDR)-Deck Analog Output
❸ Record (CDR)-Deck Analog Input
❹ Play (CDP)-Deck Coaxial-Digital Output
❺ Record (CDR)-Deck Coaxial-Digital Output
❻ Record (CDR)-Deck Coaxial-Digital Input
❼ Record (CDR)-Deck Optical-Digital Input
❽ Record (CDR)-Deck Optical-Digital Output
❾ Play (CDP)-Deck Optical-DIgital Output
❿ Remote IR Input
⓫ Remote IR Output
⓬ AC Power Cord

● FRONT PANEL

1 **Power Switch :** Press this switch to apply power to the CDR 2. When the unit is firstturned on, the **Status-Mode Indicator** 2 surrounding the switch will turn green. Once the unit has been turned on with this switch, it may be operated from either the front panel or remote control. Press the switch again to turn the unit completely off.

2 **Status-Mode Indicator :** When the CDR 2 is in the ON mode, this indicator will glow green. When the unit has been placed in the Standby mode by pressing the **Power-Off** button ㉜ on the remote, the indicator will glow amber, indicating that the unit is still connected to the AC main supply and is ready to be turned on from the remote control.

3 **Play Deck :** This disc deck is used to play back conventional CD discs and CD-R or CD-RW discs that have been finalized.

4 **Headphone Jack :** Connect standard head-phones to this jack for private listening.

5 **Headphone Level Control :** Turn this control to adjust the volume level to the head-phones. Note that the use of this control will not change the analog output levels at the rear-panel audio outputs ❶, ❷.

6 **Digital Input :** This coaxial digital input may be used to connect a portable digital audio player to the CDR 2 for digital recording. When an active digital signal is connected to both the front- and rear-panel coaxial inputs, the source connected to the front-panel input will be selected for recording.

7 **Play-Deck Open :** Press this button to open the Play Deck 3 .

8 **Record Button :** Press this button to begin the recording process.

9 **CD Sync :** Press this button once to begin an automated recording of a single track from an external CD player when a digital connection is used. Press it twice to begin automated recording of an entire disc.

10 **Dubbing :** Press this button to begin the process of making a complete copy of the disc in the Play Deck 3 to a CD-R or CD-RW disc in the Record Deck 15.

11 **Erase :** Press this button to erase one or more tracks or the entire contents of an unfi-nalized CD-RW disc. When a CD-RW disc has already been finalized you may erase the entire disc or you may **TOC** nfinalize" the disc by erasing the TOC data.

12 **Finalize :** Press this button when a record-ing is complete to initiate the finalization process. **The Play/Select Button** 18 ⑩ must be pressed within three seconds to activate finalization. Until this button is pressed and the finalization process is complete, CD-R discs may not be played on conventional CD machines.

13 **Speed :** Press this button to select the recording speed for internal dubs.

14 **Record-Deck Open :** Press this button to open the Record Deck 15.

15 **Record Deck :** This Disc Deck is used to play back CD, CD-R and CD-RW discs; it is also used for recording CDs

16 **Analog-Record Level Control :** The con-trol is used to adjust the input level when making recordings from analog sources such as cas-settes, or when CDs are recorded in an analog mode.

17 **Record-Deck Stop :** Press this button to stop the CD in the Record Deck.

18 **Record-Deck Play/Select :** This button has two functions. It may be pressed when a standard CD is in the Record Deck to put the machine in play, or it may be used to enter a selection or start certain record functions.

19 **Record-Deck Pause :** When the Record Deck is in the Play mode, pressing this button will pause the disc. If the disc has previously been paused, pressing this button will restart the playback.

20 **Record-Deck Next :** This button has two functions. When a disc is playing in the Record Deck 15, press and hold this button to play the disc in a fast-forward mode to quickly locate a desired passage. At any time, tapping the but-ton and quickly releasing it will move to the next track on a disc in play, or enter the track for programming or play when the disc is stopped. Once a track is entered, it may be played by simply pressing the **Play** button 18 ❽.

21 **Record Deck Previous :** This button has two functions. When a disc is playing in the Record Deck 15, press and hold this button to play the disc in a fast reverse mode to quickly locate a desired passage. At any time, tapping the button and quickly releasing it will move to the beginning of the current track, and the next press will move to the previous track. When a disc is stopped, each press will move back one for programming or play when the disc is stopped. Once a track is entered, it may be played by simply pressing the **Play** button 18 ❽.

22 **Input Select :** Press this button to select the input source (analog, digital coax or digital optical) for recording.

23 **Record-Deck Display Select :** Press this button to cycle through the time display options for the Record Deck.

24 **Information Display :** The indicators in the Information Display provide status reports on the operation of the CDR 2.

25 **Remote Sensor :** The IR sensor that receives the commands from the remote control is behind this area. Do not cover or obscure this part of the front panel to avoid any malfunction with the remote.

26 **Play-Deck Display Select :** Press this button to cycle through the time display options for the Play Deck.

27 **Dual-Play Selector :** Press this button to enable both CD Decks to playback at the same time and function as separate, independent CD units. In this mode it is also possible to record from an external source while the Play Deck is functioning as a standard CD player.

28 **Play-Deck Next :** This button has two functions. When a disc is playing in the Play Deck 3, press and hold this button to play the disc in a fast-forward mode to quickly locate a desired passage. At any time, tapping the button

and quickly releasing it will move to the next track on a disc in play, or enter the track for programming or play when the disc is stopped. Once a track is entered, it may be played by simply pressing the **Play** button 31 ❽.

29 **Play-Deck Previous :** This button has two functions. When a disc is playing in the Play Deck 3, press and hold this button to play the disc in a fast-reverse mode to quickly locate a desired passage. At any time, tapping the but-ton and quickly releasing it will move to the beginning of the current track, and the next press will move to the previous track. When a disc is stopped, each press will move back one for programming or play when the disc is stopped. Once a track is entered, it may be played by simply pressing the **Play** button 31 ❽.

30 **Play-Deck Pause :** When the Play Deck is running, pressing this button will pause the disc. If the disc has previously been paused, pressing this button will restart the playback .

31 **Play-Deck Play :** Press this button to begin playback of a CD in the Play Deck or the dub-bing process.

32 **Play-Deck Stop :** Press this button to stop the CD in the Play Deck.

● REAR PANEL

1 **Play (CDP)-Deck Analog Output :** These jacks carry the analog audio output signal from the **Play Deck** 3. Connect them to the CD input jacks on a receiver, preamp or processor.

2 **Record (CDR)-Deck Analog Output :** These jacks carry the output signal from the **Record Deck** 15. Connect them to the **Tape Play/In** input jacks on a receiver, preamp or processor.

3 **Record (CDR)-Deck Analog Input :** These jacks accept the analog signals that are used for CD recordings. Connect them to the Tape Rec/Play outputs on a receiver, preamp or processor.

4 **Play (CDP)-Deck Coaxial-Digital Output :** This jack carries the digital-audio out-put signal from the **Play Deck** 3. Connect it to a coaxial-digital input on a receiver, proces-sor or digital decoder.

5 **Record (CDR)-Deck Coaxial-Digital Output :** This jack carries the digital audio out-put signal from the **Record Deck** 15. Connect it to a coaxial digital input on a receiver, processor or digital decoder.

6 **Record (CDR)-Deck Coaxial-Digital Input :** This jack accepts the digital-audio input signal from a compatible digital audio product and should be connected directly to a digital player or to a coaxial-digital output on a CD or DVD player or an A/V receiver or processor.

IMPORTANT NOTE : The coaxial digital inputs should only be connected to **digital** input or output jacks. Even though they use the same RCA type connector as standard analog audio connections, DO NOT connect them to conven-tional analog input or output jacks.

7 **Record (CDR)-Deck Optical-Digital Input :** This jack accepts the digital-audio input signal from a compatible digital audio product, and should be connected directly to the optical-digital output on a CD or DVD player or an A/V receiver or processor.

8 **Record (CDR)-Deck Optical-Digital Output :** This jack carries the digital audio out-put signal from the **Record Deck** 15. Connect it to an optical digital input on a receiver, processor or digital decoder.

9 **Play (CDP)-Deck Optical-Digital Output** : This jack carries the digital audio out-put signal from the **Play Deck** 3. Connect it to an optical-digital input on a receiver, proces-sor or digital decoder.

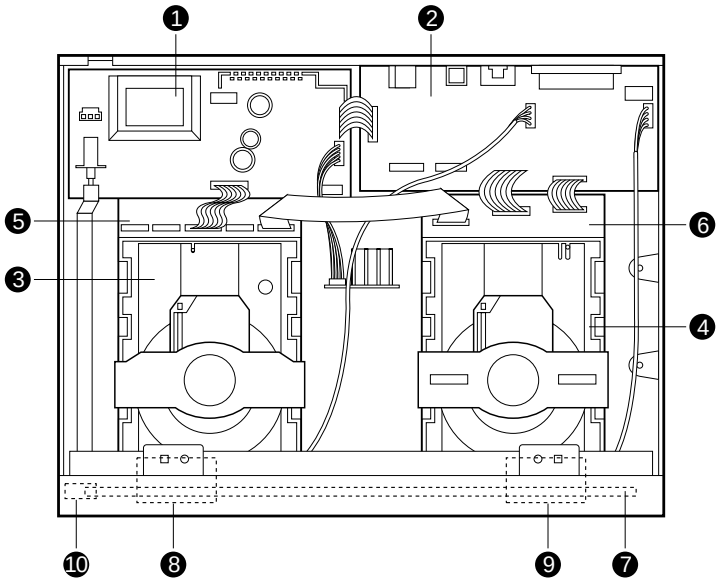
10 **Remote IR Input :** Connect the output of a remote infrared sensor or the remote control output of another compatible Harman Kardon product to this jack. This will enable the remote control to operate even when the front-panel **Remote Sensor** 25 blocked. This jack may also be used with compatible IR remote control based automation systems.

11 **Remote IR Output :** Connect this jack to the IR input jack of another compatible Harman Kardon remote controlled product to have the built-in remote sensor 25 the CDR 2 pro-vide IR signals to other compatible products.

12 **AC Power Cord** : Connect this plug to an AC outlet. If the outlet is switch controlled, make certain that it is in the **ON** position.

INTERNAL VIEW

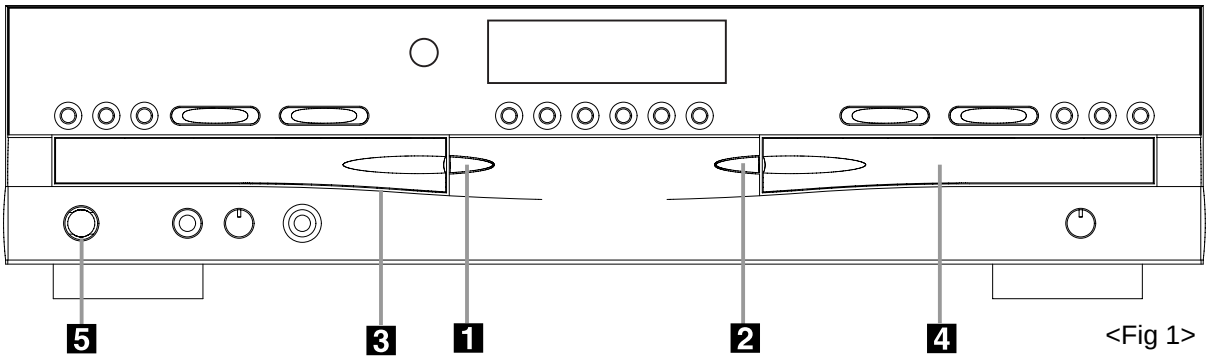
● TOP VIEW



❶ POWER P.C. BOARD (PCB-1)
❷ IO P.C. BOARD (PCB-2)
❸ CDP MECHANISM ASSY (MECHA-1)
❹ CDR MECHANISM ASSY (MECHA-2)
❺ CDP P.C. BOARD (PCB-3)
❻ CDR P.C. BOARD (PCB-4)
❼ FRONT P.C. BOARD (PCB-5)
❽ HEADPHONE P.C. BOARD (PCB-6)
❾ REC VOLUME P.C. BOARD (PCB-7)
❿ POWER LED P.C. BOARD (PCB-8)

DISASSEMBLY PROCEDURES

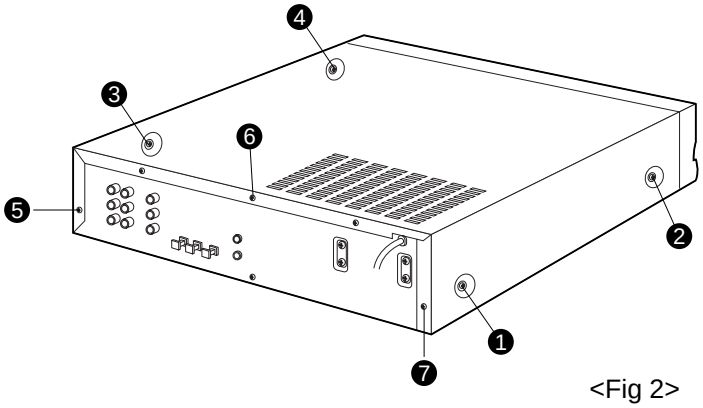
1. PCB-(POWER SWITCH) REMOVAL



<Fig 1>

1. Power on and press open buttons ❶ and ❷ in Fig.1
2. Remove the CD Door ❸ and ❹ by pulling it toward you gently.

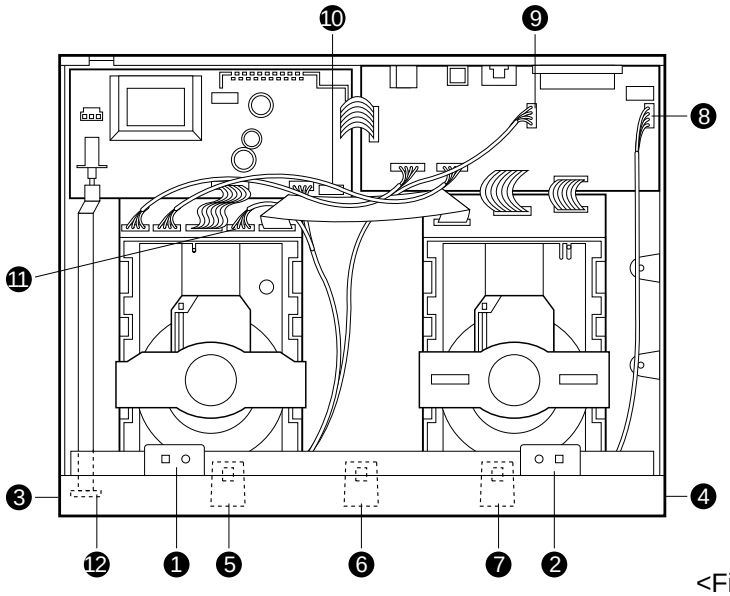
2. CABINET TOP REMOVAL



<Fig 2>

1. Remove screws ❶ to ❼ in Fig.2, and then remove the cover by sliding it to its rear a little.
2. Remove the cabinet top.

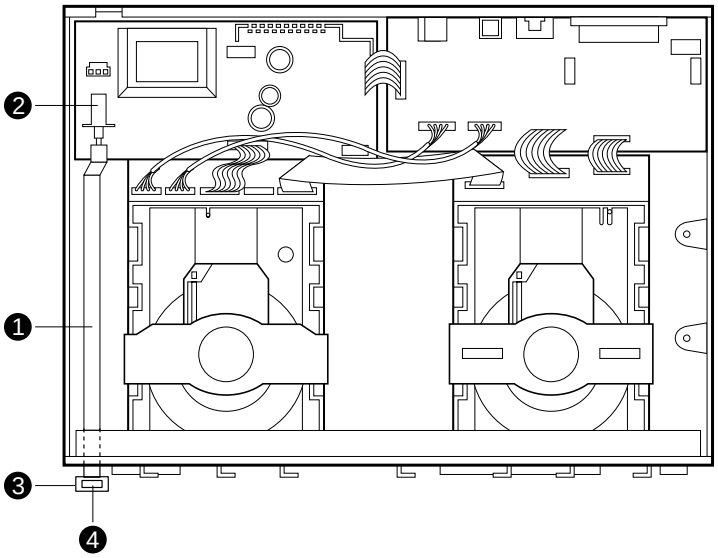
3. FRONT PANEL ASSEMBLY REMOVAL



<Fig 3>

1. Detach the connector ❶ to ⓫ in Fig.3
2. Remove the front panel by hook-off ❶ to ❼ in Fig.3 and pulling it toward you gently.
3. Detach the connector ⓬

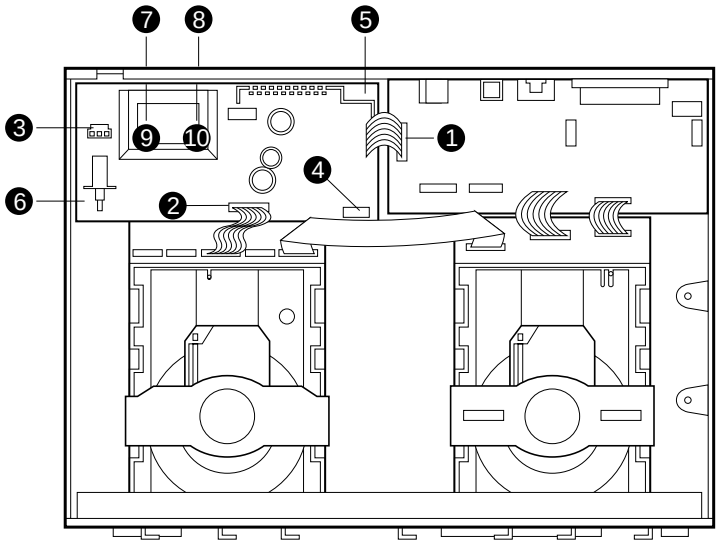
4. POWER LEVER ASSEMBLY REMOVAL



<Fig 4>

1. Pull-out the Power Lever assembly(❶) from Power Switch on the PCB-1.
2. Pull-out the Power Knob assembly(❸) from the power Lever(❶)
3. Remove the PCB-8(Power LED ❹) from the Power Knob assembly(❸)

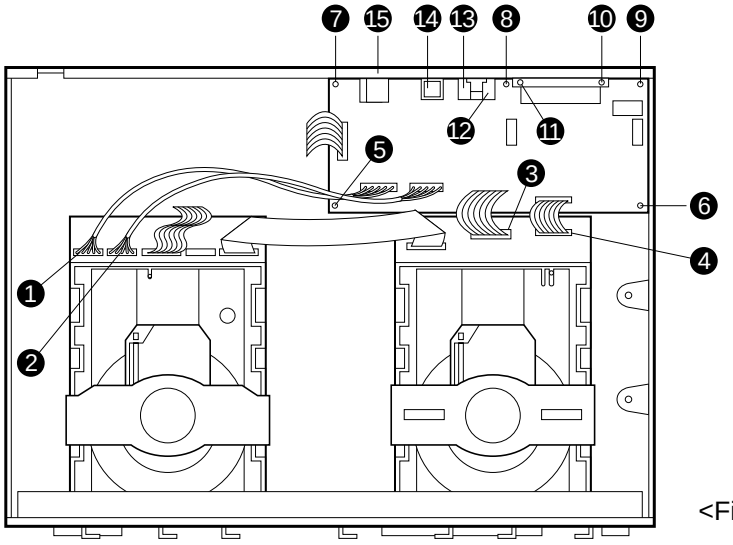
5. PCB-1(Power) REMOVAL



<Fig 5>

1. Detach the connector ❶ to ❸ in Fig.5
2. Remove screws ❹ to ❿ in Fig.5, and then remove PCB-1.

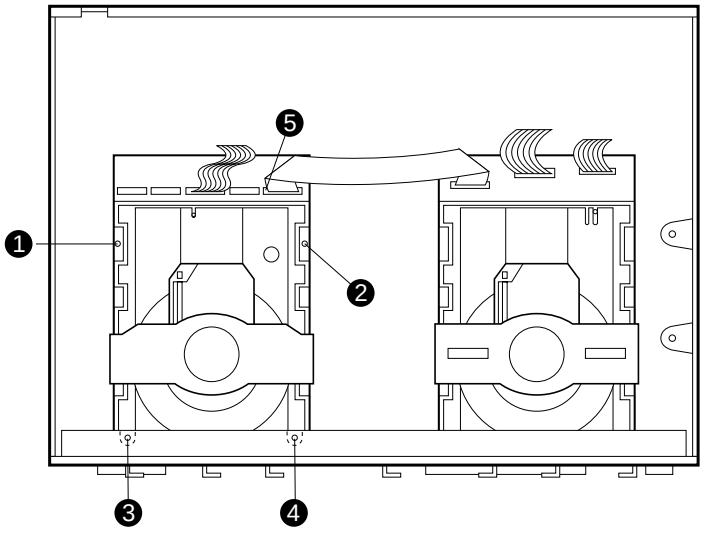
6. PCB-2(I/O) REMOVAL



<Fig 6>

1. Detach the connector ❶ to ❹ in Fig.6
2. Remove screws ❺ to ⓯ in Fig.6, and then remove PCB-2.

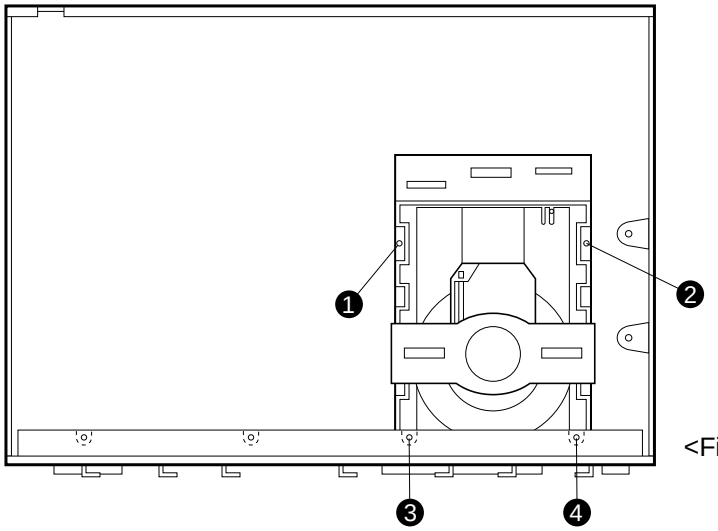
7. MECHA-1 (CDP) ASSEMBLY REMOVAL



<Fig 7>

1. Remove screws ❶ to ❹ in Fig.7
2. Detach the connector ❺ in Fig.7, and the remove the Mecha-1.

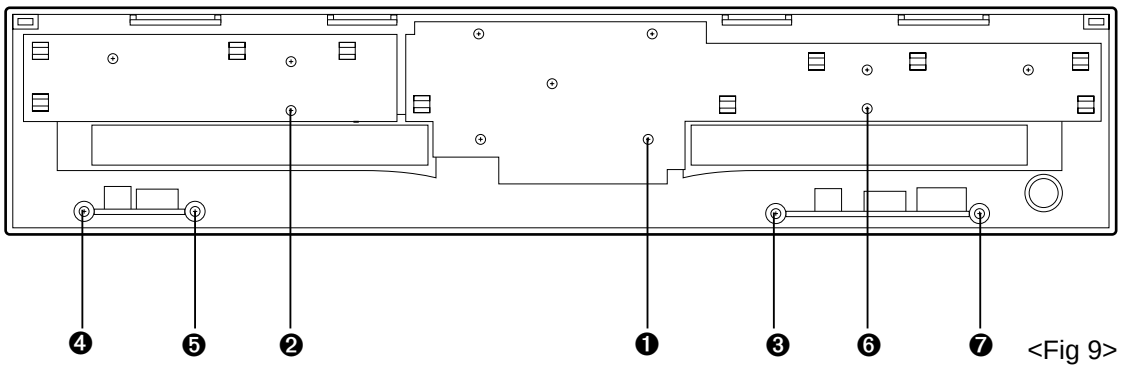
8. MECHA-2 (CDR) ASSEMBLY REMOVAL



<Fig 8>

1. Remove screws ❶ to ❹ in Fig.8
2. Remove the Mecha-2 and Cover Deck at the same time.

9. PCB-5 (Front) REMOVAL



<Fig 9>

1. Remove screws ❶ to ❸ in Fig.9
2. Pull-out the PCB-5 from the Front Panel.

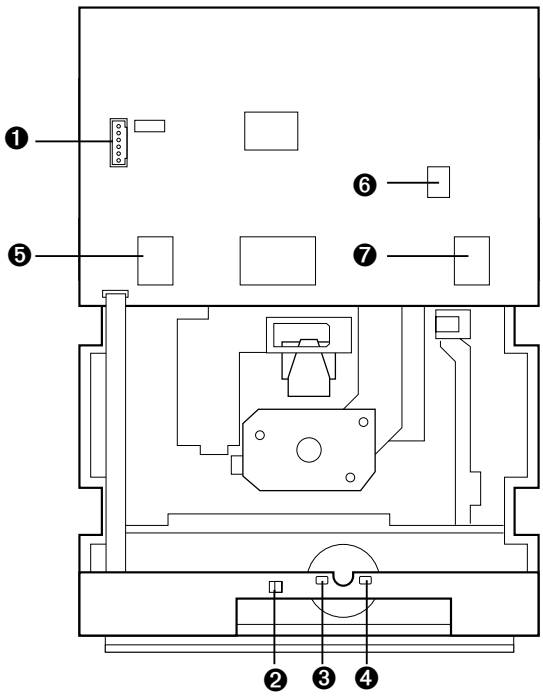
10. PCB-6(Headphone) Removal.

1. Remove screws ❻ to ❼ in Fig.9
2. Pull-out the Rotate Volume ❻ in Fig.1 from the PCB-6(Headphone).
3. Remove the PCB-6 from the Front Panel.

11. PCB-7(REC Volume) Removal.

1. Remove screws ❹ to ❺ in Fig.9
2. Pull-out the Rotate Volume ❺ in Fig.1 from the PCB-7(REC Volume).
3. Remove the PCB-7 from the Front Panel.

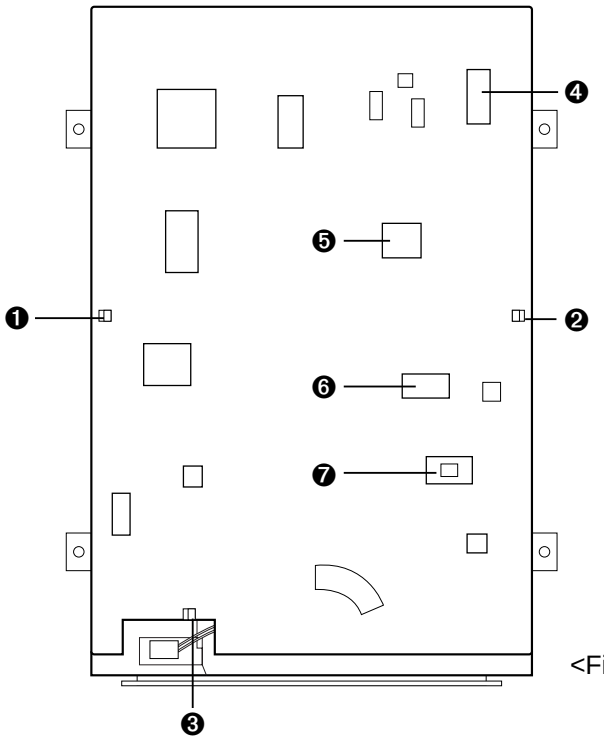
12. PCB-3(CDP) REMOVAL



<Fig 10>

1. unsolder the motor lead ❸ to ❹ which are connected to PCB-3.
2. Pull-out the PCB-3 by hook-off ❶ to ❷ in Fig.10 from the MECHA-1(CDP)
3. Detach the connector ❺ to ❼ in Fig.10
4. Remove the PCB-3 from the MECHA-1(CDP).

13. PCB-4(CDR) REMOVAL



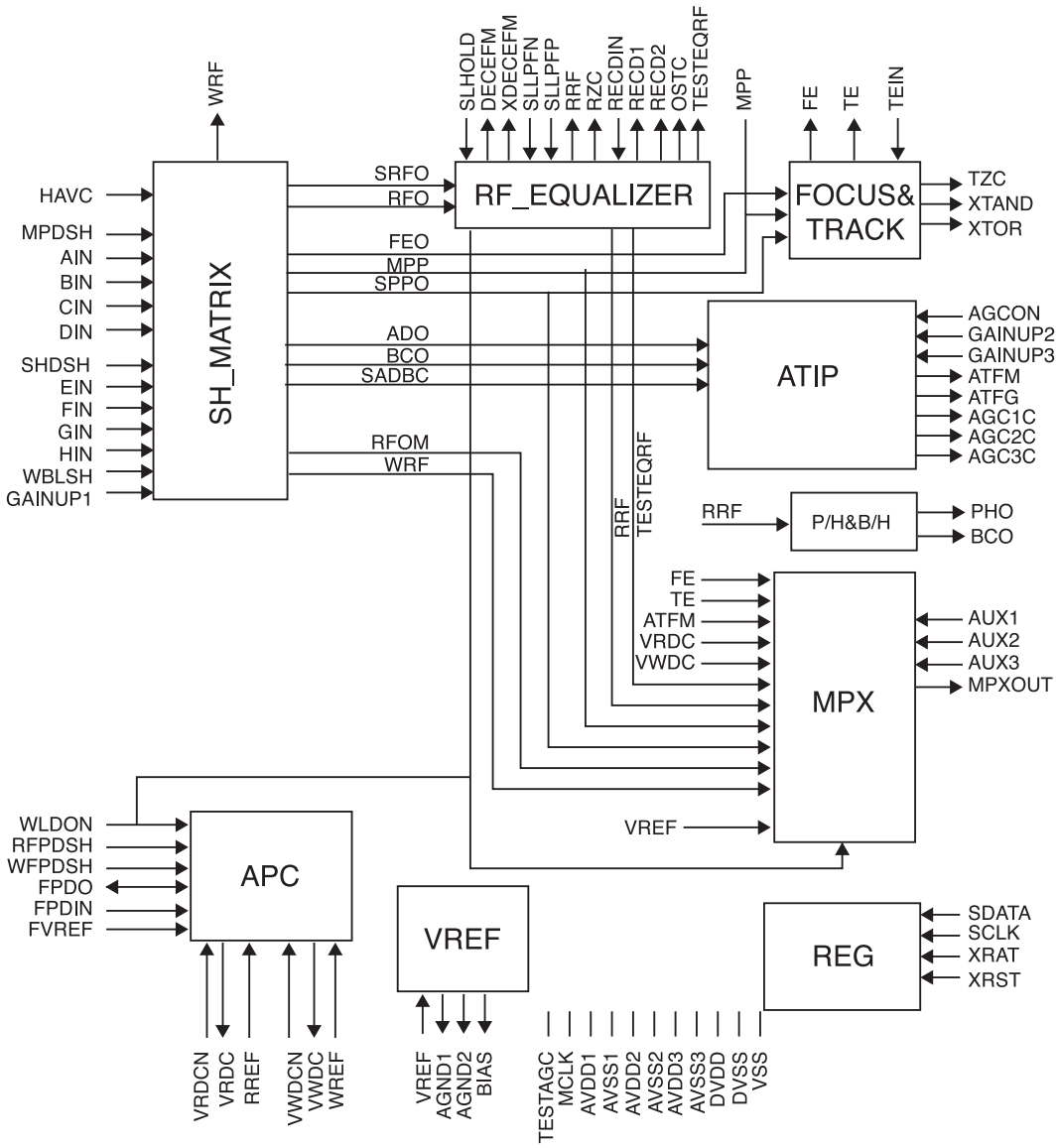
<Fig 11>

1. Pull-out the PCB-4 by hook-off ❶ to ❸ in Fig.11 from the MECHA-2(CDR)
2. Detach the connector ❹ to ❼ in Fig.11
3. Remove the PCB-4 from the MECHA-1(CDR)

BLOCK DIAGRAM

1. AK8563

① Block Diagram



② Pin Functions

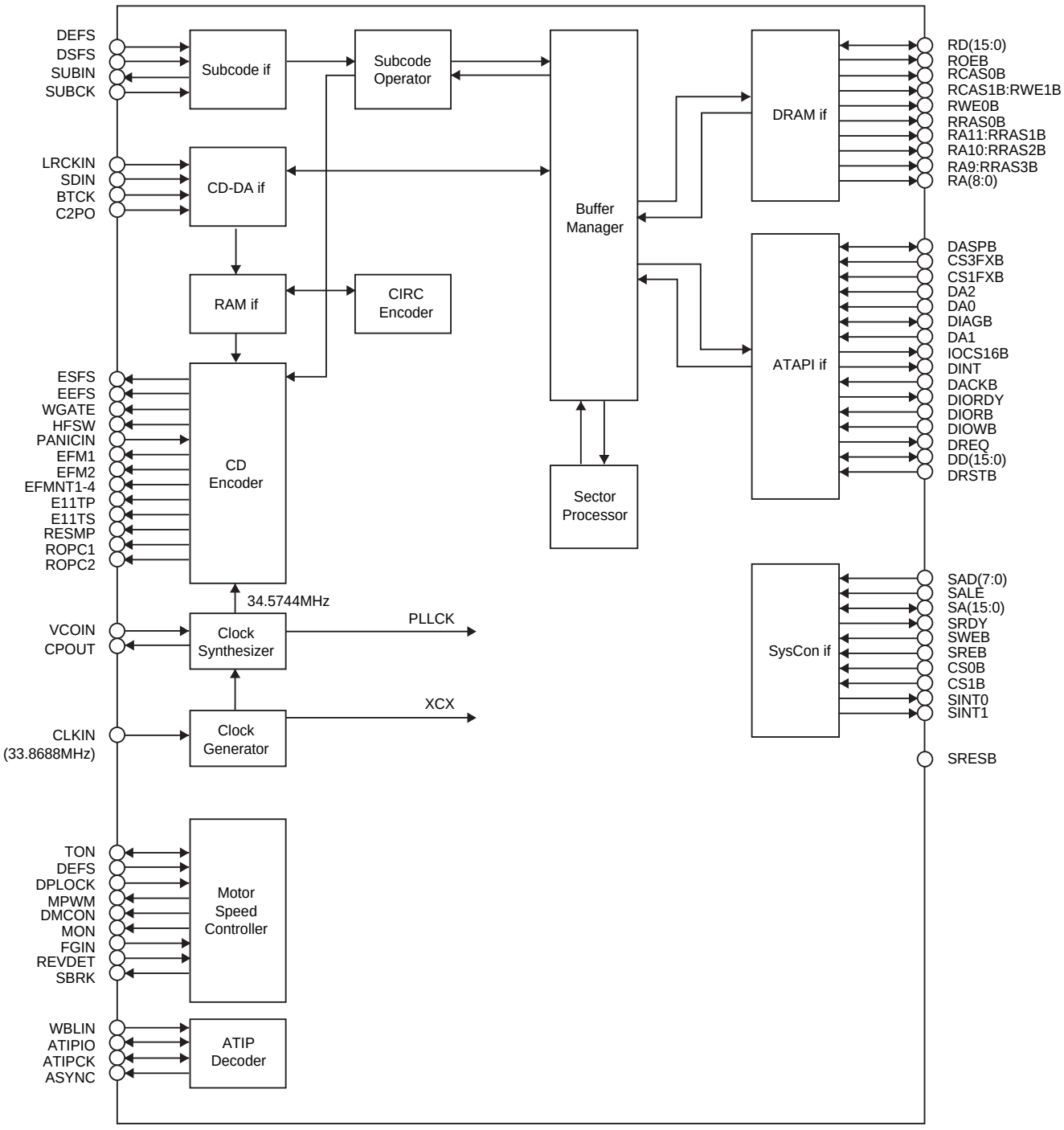
Pin Number	Designator	I/O	Functions
1	AVDD3	I	Analog Positive Power Source Pin
2	FPDIN	I	Laser Monitor Diode Contact Pin
3	FVREF	I	Reference Voltage Level Input Pin for APC
4	FPDO	I/O	Laser Monitor Output (Connect I/V conversion resistor between FPDIN)/Laser Monitor Voltage Input
5	WREF	I	Power Setting Voltage Input for Write APC
6	VWDC	O	Laser Driver Control Output for Write
7	VWDCN	I	Laser Driver Control Amp (-) Pin for Write
8	MPP	O	Main Push-Pull Signal Output
9	TEIN	I	Input for Tracking Signal Processor
10	TE	O	Tracking Error Signal Output
11	FE	O	Focus Error Signal Output
12	BIAS	O	Bias Resistance Contact Pin. RBIAS=4.7kΩ
13	AGND1	O	Decoupling Pin for Internal Reference Voltage
14	VREF	I/O	Decoupling Pin for Internal Reference Voltage/Reference Voltage Input Pin
15	NC(VSS)	-	
16	XLAT	I	Latch Input for Register Settings
17	SDATA	I	Data Input for Register Settings
18	SCLK	I	Clock Input for Register Settings
19	MCLK	I	Main Clock Input (34.5744 MHz)
20	DVSS	I	Digital Ground Pin
21	DVDD	I	Digital Positive Power Source Pin
22	ATFG	O	ATIP FG Output (Wobble Signal after binary Operation)
23	XTOR	O	Tracking Amplitude Detection Output
24	XTAND	O	Off-Track Detection Output
25	TZC	O	Tracking Zero-Cross Detection Signal Output
26	RECD2	O	Recording Area Detection Signal 2. "H" Recorded Section, "L" Unrecorded Section
27	RECD1	O	Recording Area Detection Signal 1. "H" Recorded section, "L" Unrecorded Section
28	RZC	O	RF Zero-Cross Detection Signal Output
29	DECEFM	O	EFM Output after Slice (reverse)
30	XDECEFM	O	EFM Output after Slice (normal rotation)
31	GAINUP3	I	0, +18dB Switch Control Input Pin. "H" +18dB, "L" 0dB
32	GAINUP2	I	0, +18dB Switch Control Input Pin. "H" +18dB, "L" 0dB
33	GAINUP1	I	0, +18dB Switch Control Input Pin. "H" +18dB, "L" 0dB
34	SLHOLD	I	Slice Level Hold Signal Input Pin. "H" Hold
35	MPDSH	I	Sample Pulse Input for Main Beam Signal. "H" Sample, "L" Hold
36	SPDSH	I	Sample Pulse Input for Side Beam Signal. "H" Sample, "L" Hold
37	WBLSH	I	Sample Pulse Input for Wobble Signal. "H" Sample, "L" Hold
38	RFPDSH	I	Sample Pulse Input for Read APC. "H" Sample, "L" Hold
39	WFPDSH	I	Sainple Pulse Input for Write APC. "H" Sample, "L" Hold

Pin Number	Designator	I/O	Functions
40	AVSS2	I	Analog Ground Pin
41	AVDD2	I	Analog Positive Power Source Pin
42	XRST	I	Register Reset Pin. "L" Register Initialization
43	WLDON	I	Write LD Control Input. "L" Write APC Setting to Zero, "H" LD 0N
44	AGCON	I	Wobble AGC Enable Input. "H" AGC ON, "L" AGC reset
45	TESTAGC	O	Test Pin
46	ATFM	O	Wobble Signal Output
47	AGC1C	O	External CAP Connector Pin for AGC Response Speed Setting
48	AGC2C	O	External CAP Connector Pin for AGC Response Speed Setting
49	AGC3C	O	External CAP Connector Pin for AGC Response Speed Setting
50	AGND2	O	Decoupling Pin for Internal Reference Voltage
51	BHO	O	RRF Signal Bottom Level Output Pin
52	PHO	O	RRF Signal Peak Level Output Pin
53	TESTEQRFN	O	Test Pin
54	TESTEQRFP	O	Test pin
55	SLLPFP	I	LPF Input (+) for Auto Slice
56	SLLPEN	I	LPF Input (-) for Auto Slice
57	OSTCC	O	CAP Connector Pin for Equalizer Output Offset Canceller fc
58	WRF	O	Write RF Signal Output
59	NC(VSS)	-	
60	AVSS1	O	Analog Ground Pin
61	AVDD1	I	Analog Positive Power Source Pin
62	RECDIN	I	RF Input for Recording Area Detection
63	RRF	O	Read RF Signal Output
64	MPXOUT	O	Multiplexer Output for Signal Monitoring
65	AUX1	I	Auxiliary Input Pin for Signal Monitoring (1)
66	AUX2	I	Auxiliary Input Pin for Signal Monitoring (2)
67	AUX3	I	Auxiliary Input Pin for Signal Monitoring (3)
68	GIN	I	Side Beam Signal (G) Input
69	HIN	I	Side Beam Signal (H) Input
70	EIN	I	Side Beam Signal (E) Input
71	FIN	I	Side Beam Signal (F) Input
72	HAVC	I	Main • Side Beam Signal Midpoint Voltage Input
73	DIN	I	Main Beam Signal (D) Input
74	CIN	I	Main Beam Signal (C) Input
75	BIN	I	Main Beam Signal (B) Input
76	AIN	I	Main Beam Signal (A) Input
77	RREF	I	Power Setting Voltage Input for Read APC
78	VRDCN	I	Laser Driver Control Amp (-) Pin for Read
79	VRDC	O	Laser Driver Control Output for Read
80	AVSS3	I	Analog Ground Pin

Use NC (unused) pin by connecting to VSS.

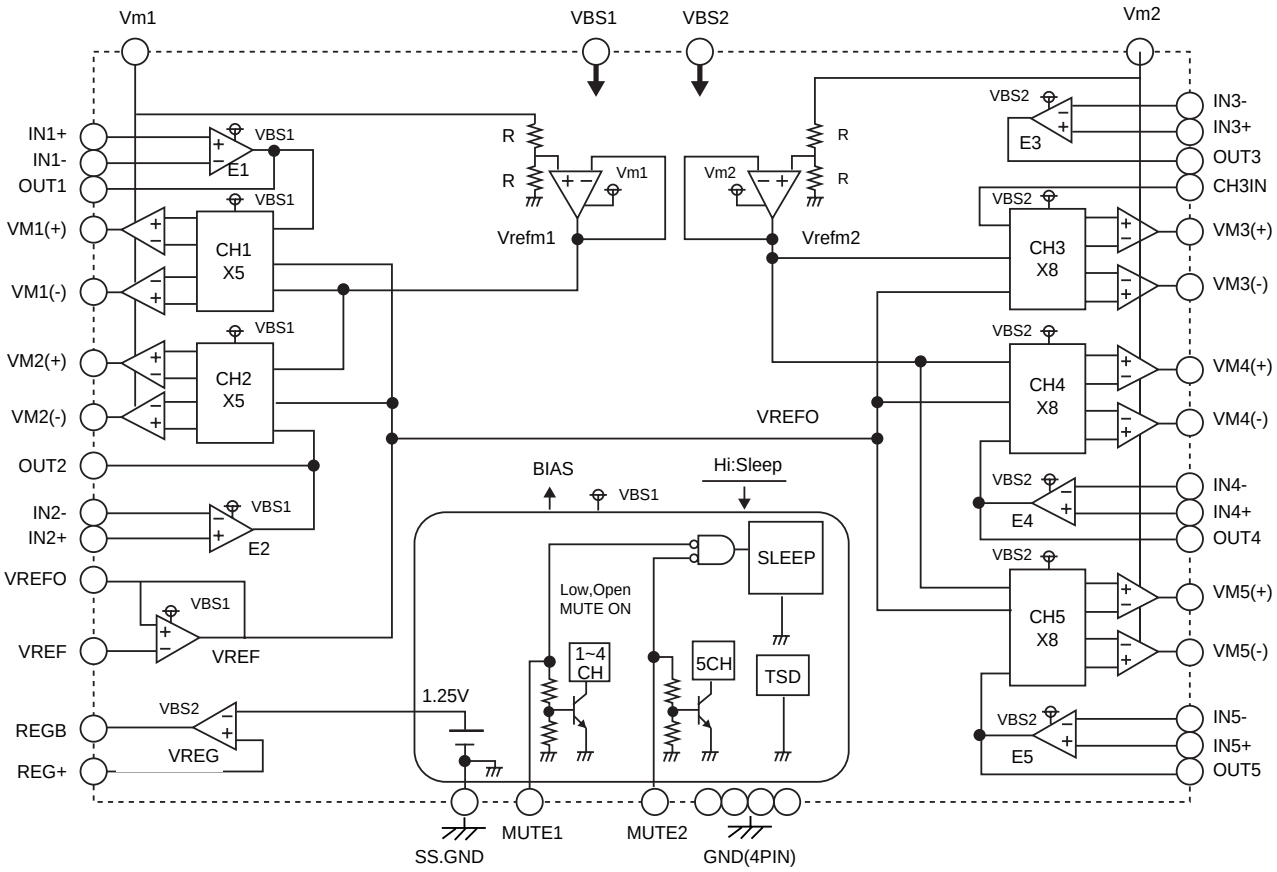
2. RL5E808

① Block Diagram



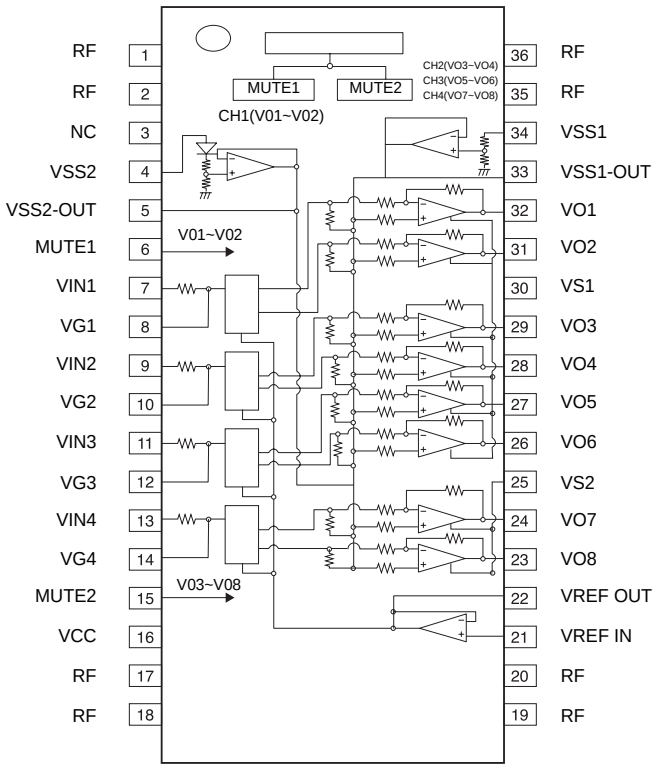
3. M56788

① Block Diagram



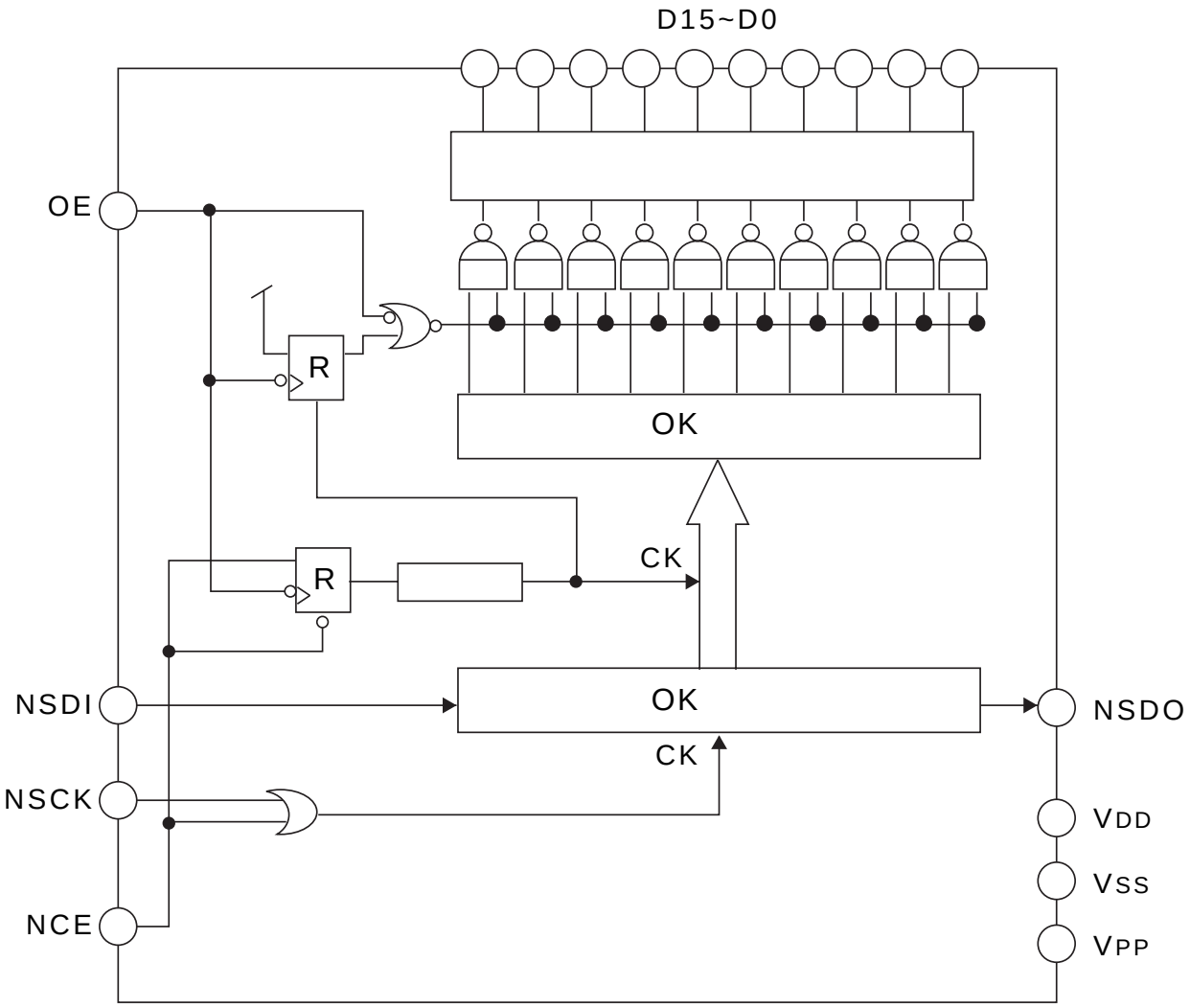
4. LA 6543M

① Block Diagram



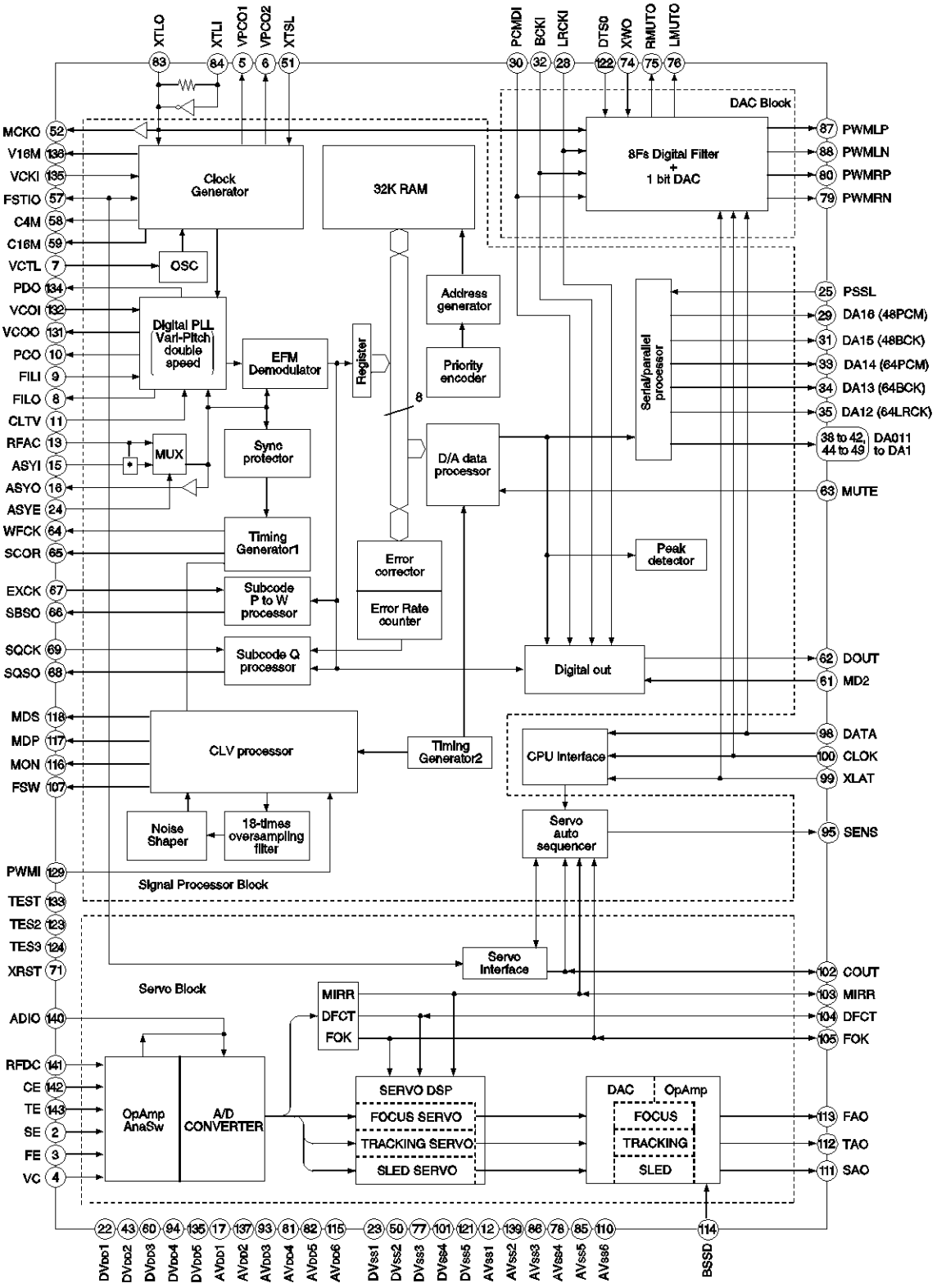
5. MN12511

① Block Diagram



①

CXD3011R-1 Block Diagram



Pin Functions

②

Pin No.	Symbol	I/O		Description
2	SE	I		Sled error signal input.
3	FE	I		Focus error signal input.
4	VC	I		Center voltage input.
5	VPCO1	O	1, Z, 0	Wide-band EFM PLL VCO2 charge pump output.
6	VPCO2	O	1, Z, 0	Wide-band EFM PLL VCO2 charge pump output 2. Turned on and off by $E command FCSW.
7	VCTL	I		Wide-band EFM PLL VCO2 control voltage input.
8	FILO	O	Analog	Master PLL filter output (slave = digital PLL).
9	FILI	I		Master PLL filter input.
10	PCO	O	1, Z, 0	Master PLL charge pump output.
11	CLTV	I		Multiplier VCO control voltage input.
12	AVss1			Analog GND.
13	RFAC	I		EFM signal input.
14	BIAS	I		Asymmetry circuit constant current input.
15	ASYI	I		Asymmetry comparator voltage input.
16	ASYO	O	1, 0	EFM full-swing output (low = V_{SS}, high = V_{DD}).
17	AVDD1			Analog power supply.
22	DVDD1			Digital power supply.
23	DVss1			Digital GND.
24	ASYE	I		Asymmetry circuit on/off (low = off, high = on).
25	PSSL	I		Audio data output mode switching input (low: serial, high: parallel).
26	WDCK	O	1, 0	D/A interface for 48-bit slot. Word clock f = 2Fs.
27	LRCK	O	1, 0	D/A interface for 48-bit slot. LR clock f = Fs.
28	LRCKI	I		LR clock input to DAC (48-bit slot).
29	DA16	O	1, 0	DA16 (MSB) output when PSSL = 1, 48-bit slot serial data output (two's complement, MSB first) when PSSL = 0.
30	PCMDI	I		Audio data input to DAC (48-bit slot).
31	DA15	O	1, 0	DA15 output when PSSL = 1, 48-bit slot bit clock output when PSSL = 0.
32	BCKI	I		Bit clock input to DAC (48-bit slot).
33	DA14	O	1, 0	DA14 output when PSSL = 1, 64-bit slot serial data output (two' complement, LSB first) when PSSL = 0.
34	DA13	O	1, 0	DA13 output when PSSL = 1, 64-bit slot bit clock output when PSSL = 0.
35	DA12	O	1, 0	DA12 output when PSSL = 1, 64-bit slot LR clock output when PSSL = 0.
38	DA11	O	1, 0	DA11 output when PSSL = 1, GTOP output when PSSL = 0.
39	DA10	O	1, 0	DA10 output when PSSL = 1, XUGF output when PSSL = 0.
40	DA09	O	1, 0	DA09 output when PSSL = 1, XPLCK output when PSSL = 0.

Pin No.	Symbol	I/O		Description
41	DA08	O	1, 0	DA08 output when PSSL = 1, GFS output when PSSL = 0.
42	DA07	O	1, 0	DA07 output when PSSL = 1, RFCK output when PSSL = 0.
43	$DV_{DD}2$			Digital power supply.
44	DA06	O	1, 0	DA06 output when PSSL = 1, C2PO output when PSSL = 0.
45	DA05	O	1, 0	DA05 output when PSSL = 1, XRAOF output when PSSL = 0.
46	DA04	O	1, 0	DA04 output when PSSL = 1, MNT3 output when PSSL = 0.
47	DA03	O	1, 0	DA03 output when PSSL = 1, MNT2 output when PSSL = 0.
48	DA02	O	1, 0	DA02 output when PSSL = 1, MNT1 output when PSSL = 0.
49	DA01	O	1, 0	DA01 output when PSSL = 1, MNT0 output when PSSL = 0.
50	$DV_{SS}2$			Digital GND.
51	XTSL	I		Crystal selection input.
52	MCKO	O	1, 0	Clock output. Inverted output of XTLI.
57	FSTIO	I/O	1, 0	Digital servo clock input/output. (2/3 frequency division for XTLI pin is internally connected.)
58	C4M	O	1, 0	1/4 frequency division output for XTLI pin. Changes with variable pitch.
59	C16M	O	1, 0	16.9344MHz output. Changes simultaneously with variable pitch.
60	$DV_{DD}3$			Digital power supply.
61	MD2	I		Digital Out on/off control (low = off, high = on).
62	DOUT	O	1, 0	Digital Out output.
63	MUTE	I		Mute (low: off, high: on).
64	WFCK	O	1, 0	WFCK (Write Frame Clock) output.
65	SCOR	O	1, 0	Outputs a high signal when either subcode sync S0 or S1 is detected.
66	SBSO	O	1, 0	Sub P to W serial output.
67	EXCK	I		SBSO readout clock input.
68	SQSO	O	1, 0	Sub-Q 80-bit, PCM peak and level data 16-bit outputs.
69	SQCK	I		SQSO readout clock input.
70	SCSY	I		GRSCOR resynchronization input. Normally low, resynchronization is executed when high.
71	XRST	I		System reset. Reset when low.
74	XWO	I		Audio DAC sync window open input. Normally high, window open when low.
75	RMUTO	O	1, 0	Audio DAC right channel zero detection flag.
76	LMUTO	O	1, 0	Audio DAC left channel zero detection flag.
77	DVss3			Digital GND.
78	AVss4			Analog GND.
79	PWMRN	O	1, Z, 0	Audio DAC PWM output. Right channel, reversed phase.

Pin No.	Symbol	I/O		Description
80	PWMRP	O	1, Z, 0	Audio DAC PWM output. Right channel, forward phase.
81	AVDD4			Analog power supply.
82	AVDD5			Master clock power supply.
83	XTLO	O	1, 0	Master clock crystal oscillation circuit output.
84	XTLI	I		Master clock crystal oscillation circuit input.
85	AVss5			Master clock GND.
86	AVss3			Analog GND.
87	PWMLP	O	1, Z, 0	Audio DAC PWM output. Left channel, forward phase.
88	PWMLN	O	1, Z, 0	Audio DAC PWM output. Left channel, reversed phase.
93	AVDD3			Analog power supply.
94	DVDD4			Digital power supply.
95	SENS	O	1, Z, 0	SENS output to CPU.
96	SCLK	I		SENS serial data readout clock input. Set to high when not used.
97	ATSK	I		Anti-shock pin. Set to low when not used.
98	DATA	I		Serial data input from CPU.
99	XLAT	I		Latch input from CPU. Serial data is latched at the falling edge.
100	CLOK	I		Serial data transfer clock input from CPU.
101	DVss4			Digital GND.
102	COUT	I/O	1, 0	Track count signal I/O.
103	MIRR	I/O	1, 0	Mirror signal I/O.
104	DFCT	I/O	1, 0	Defect signal I/O.
105	FOK	I/O	1, 0	Focus OK signal I/O.
106	TESO	O		Test pin. Leave this open.
107	FSW	O	1, Z, 0	Spindle motor output filter switching output. GRSCOR output when $8 command SCOR SEL = high.
110	AVss6			Analog GND.
111	SAO	O		Sled filter DAC analog output.
112	TAO	O		Tracking filter DAC analog output.
113	FAO	O		Focus filter DAC analog output.
114	BSSD	I		Constant current input for servo filter DAC analog output.
115	AVDD6			Analog power supply.
116	MON	O	1, 0	Spindle motor on/off control output.
117	MDP	O	1, Z, 0	Spindle motor servo control output.
118	MDS	O	1, Z, 0	Spindle motor servo control output.

Pin No.	Symbol	I/O		Description
119	LOCK	I/O	1, 0	GFS is sampled at 460Hz; when GFS is high, this pin outputs a high signal. If GFS is low eight consecutive samples, this pin outputs low. Input when LKIN = high. (See $3E.)
120	SSTP	I		Disc innermost track detection signal input.
121	DVss5			Digital GND.
122	DTS0	I		Test pin. Normally fixed to low.
123	TES2	I		Test pin. Normally fixed to low.
124	TES3	I		Test pin. Normally fixed to low.
129	PWMI	I		Spindle motor external pin input.
130	DVDD5			Digital power supply.
131	VCOO	O	1, 0	Analog EFM PLL oscillation circuit output.
132	VCOI	I		Analog EFM PLL oscillation circuit input. flock = 8.6436MHz.
133	TEST	I		Test pin. Normally fixed to low.
134	PDO	O	1, Z, 0	Analog EFM PLL charge pump output.
135	VCKI	I		Variable pitch clock input from the external VCO. fcenter = 16.9344MHz. Set VCKI to low when the external clock is not input to this pin.
136	V16M	O	1, 0	Wide-band EFM PLL VCO2 oscillation output.
137	AVDD2			Analog power supply.
138	IGEN	I		Connects the operational amplifier current source reference resistance.
139	AVss2		—	Analog GND.
140	ADIO	O		Operational amplifier output.
141	RFDC	I		RF signal input.
142	CE	I		Center servo analog input.
143	TE	I		Tracking error signal input.

*In the CXD3011R, the following pins are NC.

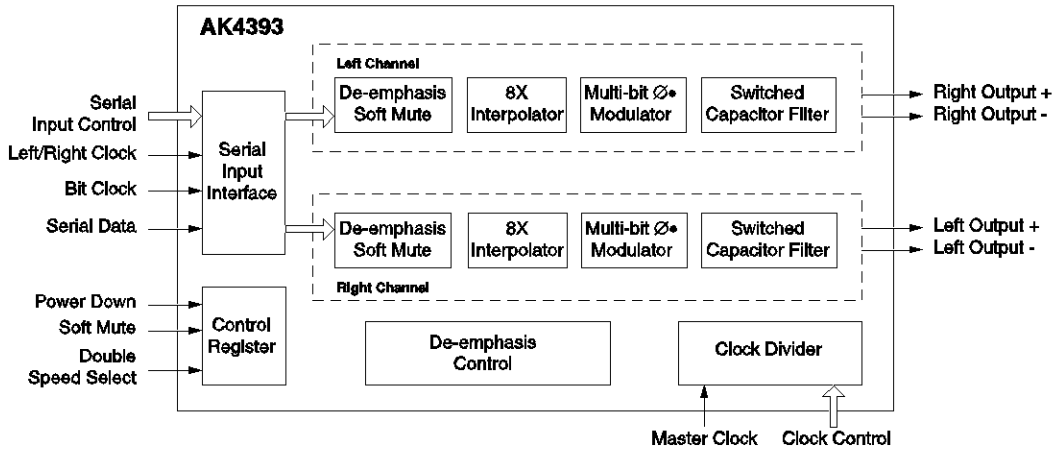
Pins 1, 18 to 21, 36, 37, 53 to 56, 72, 73, 89 to 92, 108, 109, 125 to 128 and 144

Notes) • The 64-bit slot is a LSB first, two's complement output. The 48-bit slot is a MSB first, two's complement output.

- GTOP is used to monitor the frame sync protection status. (High: sync protection window released.)
- XUGF is the frame sync obtained from the EFM signal, and is negative pulse. It is the signal before sync protection.
- XPLCK is the inverse of the EFM PLL clock. The PLL is designed so that the falling edge and the EFM signal transition point coincide.
- The GFS signal goes high when the frame sync and the insertion protection timing match. (See $348.)
- RFCK is derived from the crystal accuracy, and has a cycle of 136µs. (during normal speed)
- C2PO represents the data error status.
- XRAOF is generated when the 32K RAM exceeds the ±28F jitter margin..

AK4393 Block Diagram

①



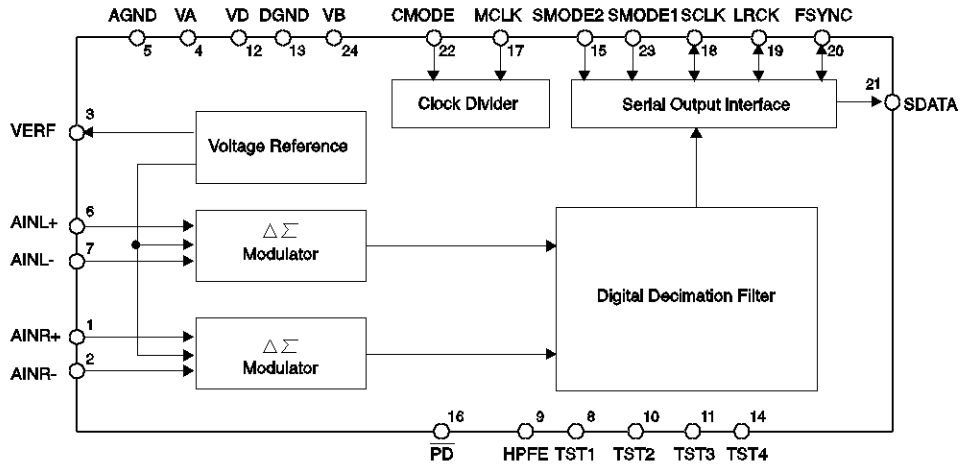
②

No.	Pin Name	I/O	Pin Function and Description
1	DVSS	-	Digital Ground. Digital ground is 0V.
2	DVDD	-	Digital Supply. 3.3V or 5.0V nominal.
3	MCLK	I	Master Clock Input. See Table 1.
4	PD	I	Power-down and Reset. When low the AK4393 is in Power-down Mode and held in reset. The AK4393 should always be reset after power-up.
5	BICK	I	Audio Serial Data Clock Input. A clock input of 64fs or more is recommended.
6	SDATA	I	Serial Data Input.
7	LRCK	I	Left/Right Clock Input. Defines the sampling rate, F_s.
8	SMUTE (or CS)	I	Soft Mute Input or Chip Select Input. If the P/S pin (pin 25) is high, SMUTE controls the soft mute function as follows: • When SMUTE goes high, the soft mute cycle is initiated. • When SMUTE goes low, the output mute is slowly released. If the P/S pin is low, SMUTE is the Chip Select Input for the Serial Control Mode. Chip select is active when SMUTE is low.
9	DFS	I	Double Sampling Speed Input. When low, this pin defines the Normal Speed Mode, and 128 x F_s oversampling is implemented. When high, the DFS pin defines the Double Speed Mode, implemented with 64 x F_s oversampling. This pin features an internal pull-down.
10	DEM0 (or CCLK)	I	De-emphasis Enable #0 or Control Data Clock Input. If the P/S pin (pin 25) is high, DEM0 is used to select the De-emphasis Mode according to Table 3. If the P/S pin is low, DEM0 is the clock input for the Serial Control Mode.
11	DEM1 (or CDTI)	I	De-emphasis Enable #1 or Control Data Input. If the P/S pin (pin 25) is high, DEM1 is used to select the De-emphasis Mode according to Table 3. If the P/S pin is low, DEM1 is the control data input for the Serial Control Mode.
12	DIF0	I	Digital Input Format Select #0. See Table 2.
13	DIF1	I	Digital Input Format Select #1. See Table 2.
14	DIF2	I	Digital Input Format Select #2. See Table 2.
15	BVSS	-	Substrate Ground Pin. Substrate ground is 0V.
16	VREFL	I	Low Level Voltage Reference Input. Normally connected to analog ground.
17	VREFH	I	High Level Voltage Reference Input. Normally connected to analog supply.
18	AVDD	-	Analog Supply. Analog supply is 5V nominal.
19	AVSS	-	Analog Ground. Analog ground is 0V.

No.	Pin Name	I/O	Pin Function and Description
20	AOUTR-	O	Right Channel Negative Output.
21	AOUTR+	O	Right Channel Positive Output.
22	AOUTL-	O	Left Channel Negative Output.
23	AOUTL+	O	Left Channel Positive Output.
24	VCOM	O	Common Voltage Output. Common voltage output is 2.6V nominal.
25	P/S	I	Parallel/Serial Control Mode Select Input. If Low, the Serial Control Mode is implemented. If High, the Parallel Control Mode is selected. This pin has an internal pull-up.
26	CKS0	I	Master Clock Select #0. See Table 1.
27	CKS1	I	Master Clock Select #1. See Table 1.
28	CKS2	I	Master Clock Select #2. See Table 1.

AK5351 Block Diagram

①



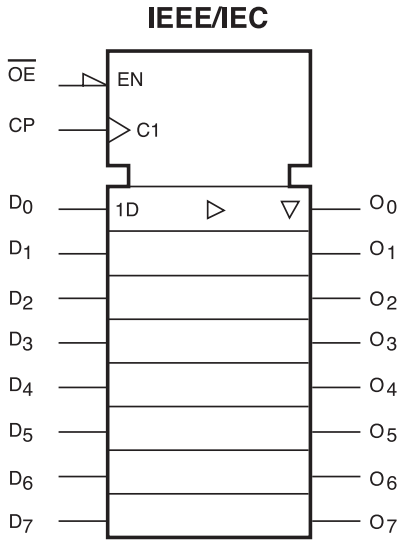
② Pin Descriptions

No.	Pin Name	I/O	FUNCTION
1	AINR+	I	Right channel analog positive input pin
2	AINR-	I	Right channel analog negative input Pin
3	VREF	O	Voltage Reference output pin (VA-2.6V) Normally connected to VA with a 0.luF ceramic capacitor in parallel with a 10uF electrolytic capacitor.
4	VA	—	Analog section Analog Power Supply, +5V
5	AGND	—	Analog section Analog Ground
6	AINL+	I	Left channel analog positive input pin
7	AINL-	I	Left channel analog negative input pin
8 10 11 14	TST1 TST2 TST3 TST4		Test pin (Pull-down pin) Should be left floating.
9	HPFE	I	High Pass Filter Enable pin(Pull-up pin) "H": ON "L": OFF
12	VD	—	Digital section Digital Power Supply pin, +5V
13	DGND	—	Digital section Digital Ground pin
16	$\overline{PD}$	I	Power Down pin "L" brings tne device into power-down mode. Must be done once after power-on.
17	MCLK	I	Master Clock input pin CMODE="H" : 384fs CMODE="L" : 256fs
18	SCLK	I/O	Serial Data Clock pin Data is clocked out at the falling edge of SCLK. Slave mode: 64fs clock is input usually. Master mode: SCLK outputs a 64fs clock. SCLK stays low during the power-down mode($\overline{PD}$="L").
19	LRCK	I/O	L/R Channel Clock Select pin Slave mode: An fs clock is fed to this LRCK pin. Master mode: LRCK output an fs clock. LRCK goes "H" at SMODE2="L" and "L" at SMODE2="'H" during reset when SMODE1 "H".
20	FSYNC	I/O	Frame Synchronization Signal pin Slave mode: When "H", data bits are clocked out on SDATA. As I^2S slave mode ignores FSYNC, it should hold "L" or "H". Master mode: FSYNC outputs 2fs clock. Stay low during the power-down mode($\overline{PD}$="L")
21	SDATA	O	Serial Data Output pin Data are output with MSB first, in 2's complement format. After 20 bits are output it turns to "L". It also remains "L"at a power-down mode($\overline{PD}$="L").

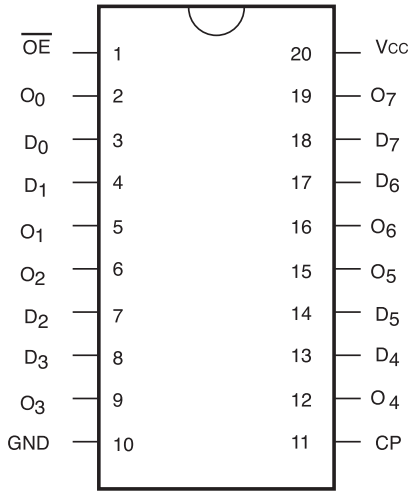
No.	Pin Name	I/O	FUNCTION
22	CMODE	I	Master Clock Selection pin "L": MCLK=256fs "H": MCLK=384fs
23 15	SMODE1 SMODE2	I I	Serial Interface Mode Select pin Defines the directions of LRCK, SCLK and FSYNC pins and Output Data Format. SMODE2 is pull-down pin. SMODE1 SMODE2 MODE LRCK L L Slave mode: MSB justified: :H/L H L Master mode: Similar to I²S :H/L L H Slavemode:I²S :L/H H H Master mode:I²S :L/H
24	VB	–	Substrate Power Supply, +5V

9. 74VHC374

① Logic Symbol



② Connection Diagram

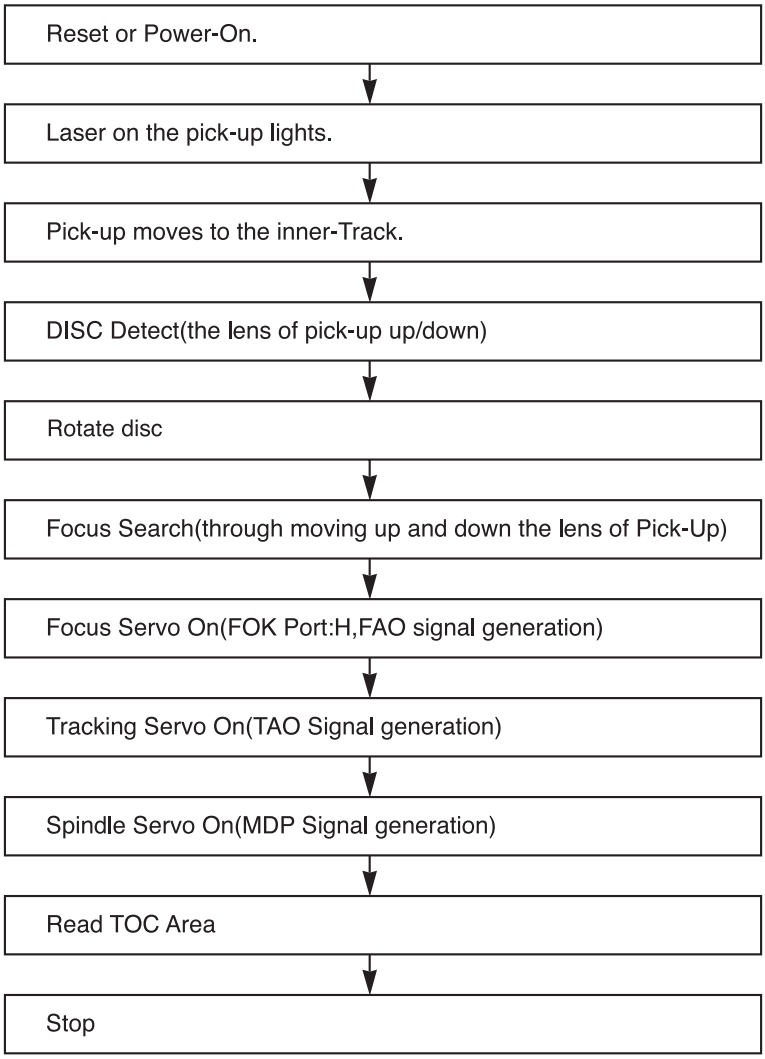


③ Pin Descriptions

Pin Names	Description
D_0-D_7	Data Inputs
CP	Clock Pulse Input
$\overline{OE}$	3-STATE Output Enable Input
O_0-O_7	3-STATE Outputs

TROUBLESHOOTING GUIDE

1. Initial Lead-in Operation


Reset or Power-On.
Laser on the pick-up lights.
Pick-up moves to the inner-Track.
DISC Detect(the lens of pick-up up/down)
Rotate disc
Focus Search(through moving up and down the lens of Pick-Up)
Focus Servo On(FOK Port:H,FAO signal generation)
Tracking Servo On(TAO Signal generation)
Spindle Servo On(MDP Signal generation)
Read TOC Area
Stop

2. Trouble List(Circuit)

(In the Initial Lead-in Operation Mode)

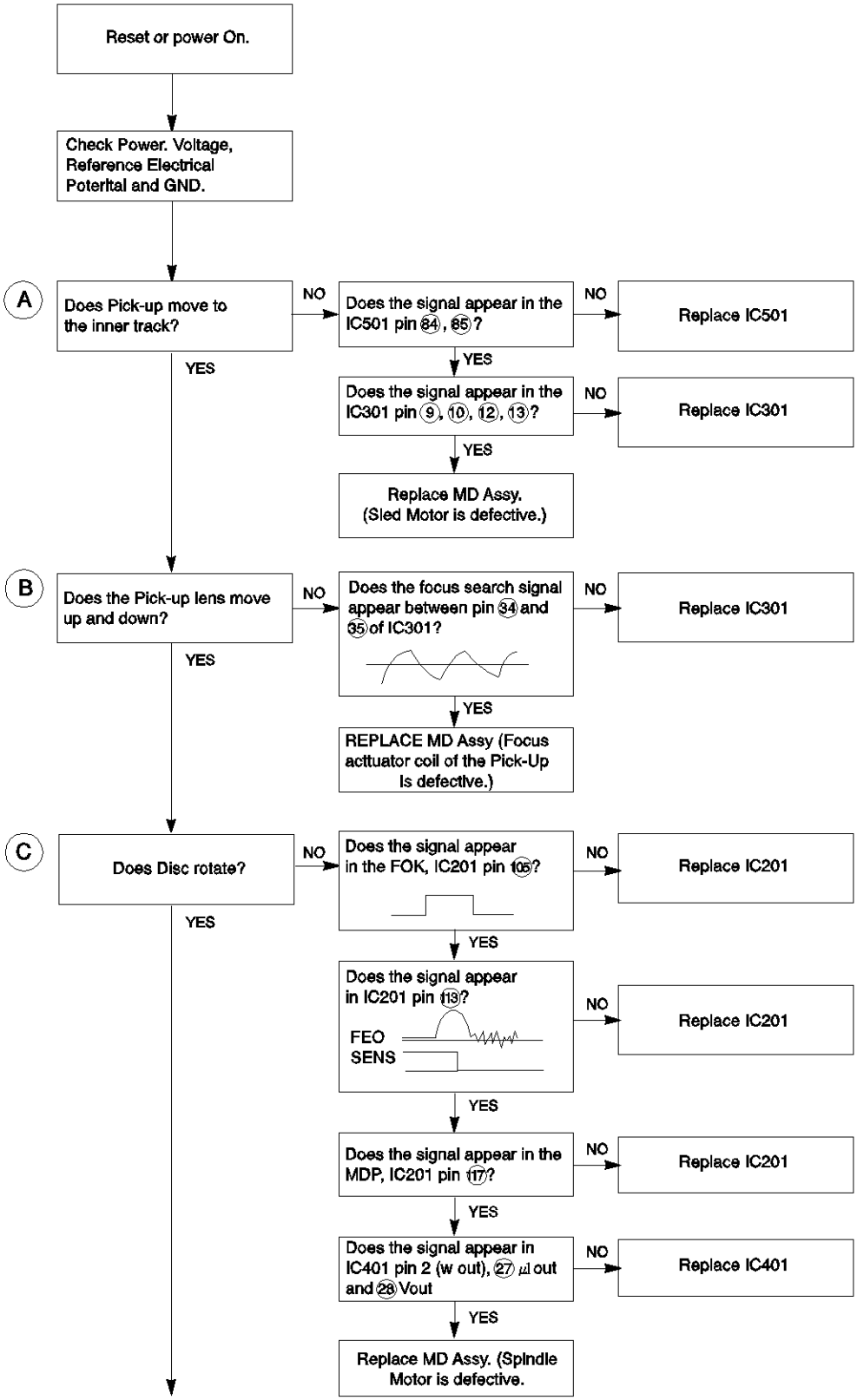
A. Pick-Up doesn't move to the inner-track.

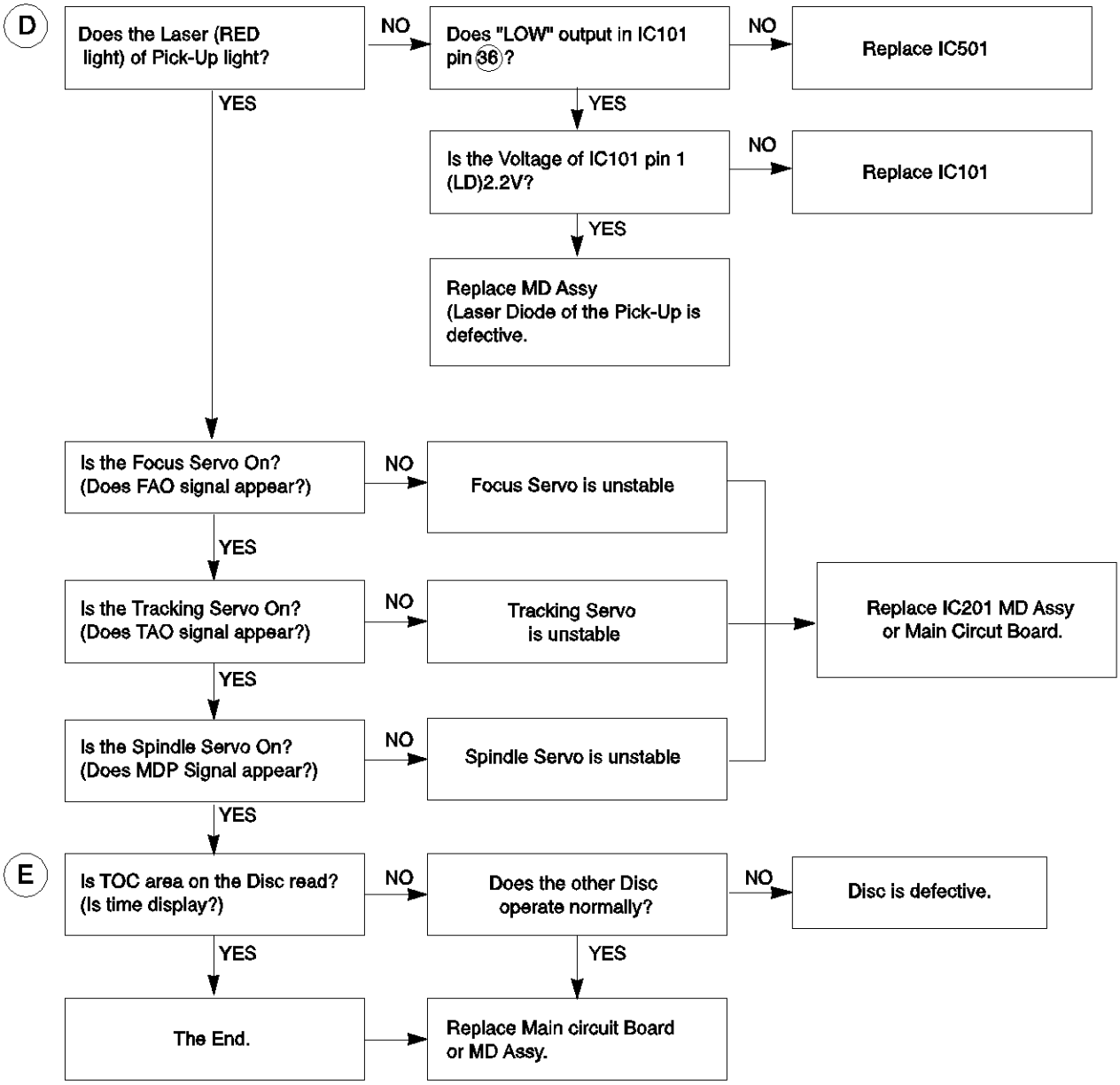
B. Pick-Up lens doesn't move up and down.

C. Disc doesn't rotate.

D. The Laser(RED) of Pick-Up doesn't light.

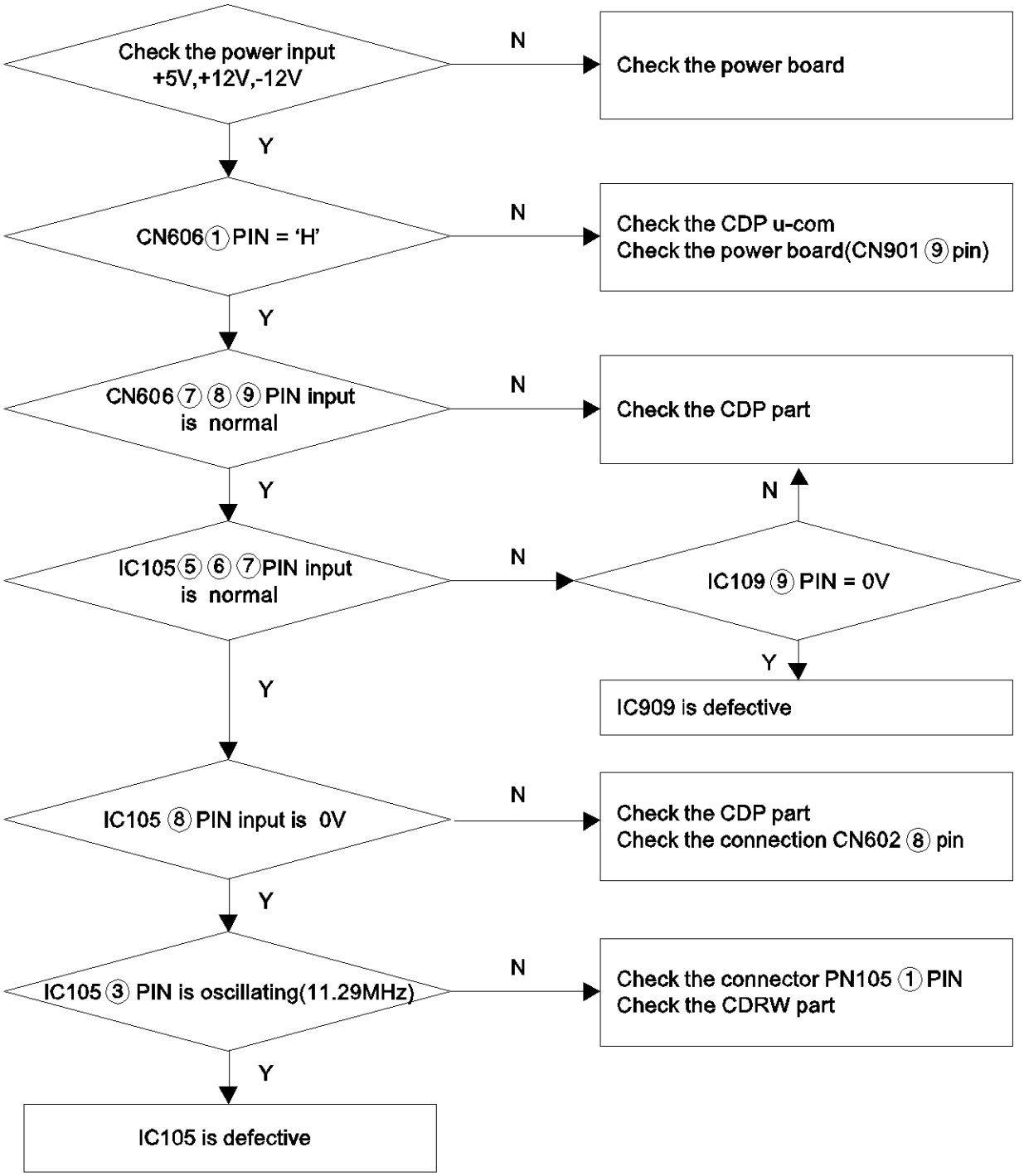
E. TOC isn't read.


Reset or power On.
Check Power. Voltage, Reference Electrical Poterltal and GND.
A
Does Pick-up move to the inner track?
NO
Does the signal appear in the IC501 pin 84, 85?
NO
Replace IC501
YES
YES
Does the signal appear in the IC301 pin 9, 10, 12, 13?
NO
Replace IC301
YES
Replace MD Assy. (Sled Motor is defective.)
B
Does the Pick-up lens move up and down?
NO
Does the focus search signal appear between pin 34 and 35 of IC301?
NO
Replace IC301
YES
YES
REPLACE MD Assy (Focus acttuator coil of the Pick-Up Is defectlve.)
C
Does Disc rotate?
NO
Does the signal appear in the FOK, IC201 pin 105?
NO
Replace IC201
YES
YES
Does the signal appear in IC201 pin 113?
FEO
SENS
NO
Replace IC201
YES
Does the signal appear in the MDP, IC201 pin 117?
NO
Replace IC201
YES
Does the signal appear in IC401 pin 2 (w out), 27 µl out and 28 Vout
NO
Replace IC401
YES
Replace MD Assy. (Spindle Motor is defective.


D
Does the Laser (RED light) of Pick-Up light?
NO
Does "LOW" output in IC101 pin 36 ?
NO
Replace IC501
YES
YES
Is the Voltage of IC101 pin 1 (LD)2.2V?
NO
Replace IC101
YES
Replace MD Assy (Laser Diode of the Pick-Up is defective.
Is the Focus Servo On? (Does FAO signal appear?)
NO
Focus Servo is unstable
YES
Is the Tracking Servo On? (Does TAO signal appear?)
NO
Tracking Servo is unstable
Replace IC201 MD Assy or Main Circut Board.
YES
Is the Spindle Servo On? (Does MDP Signal appear?)
NO
Spindle Servo is unstable
YES
E
Is TOC area on the Disc read? (Is time display?)
NO
Does the other Disc operate normally?
NO
Disc is defective.
YES
YES
The End.
Replace Main circuit Board or MD Assy.

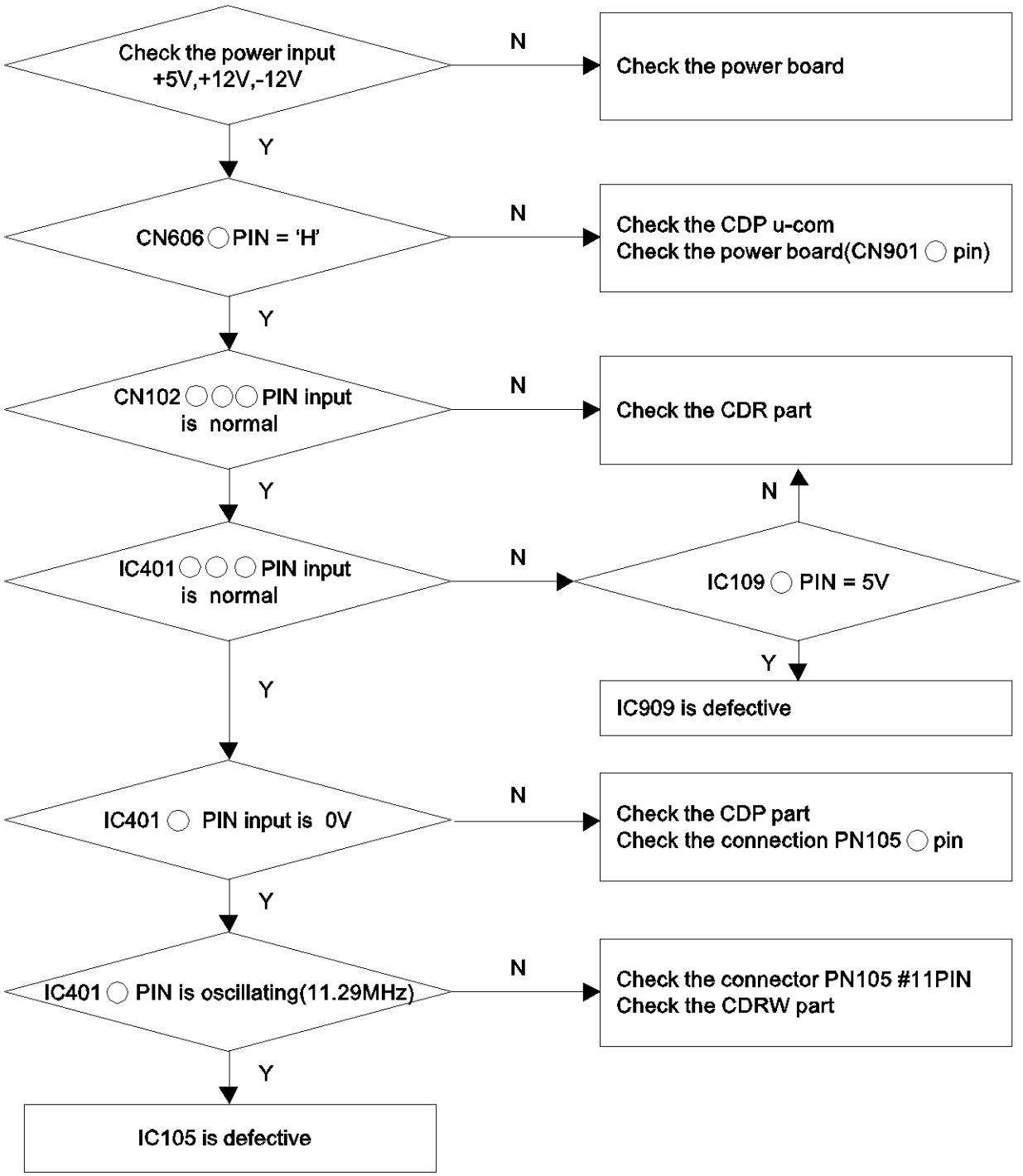
NO AUDIO(CDP JACK)

CURRENT DECK IS CDP



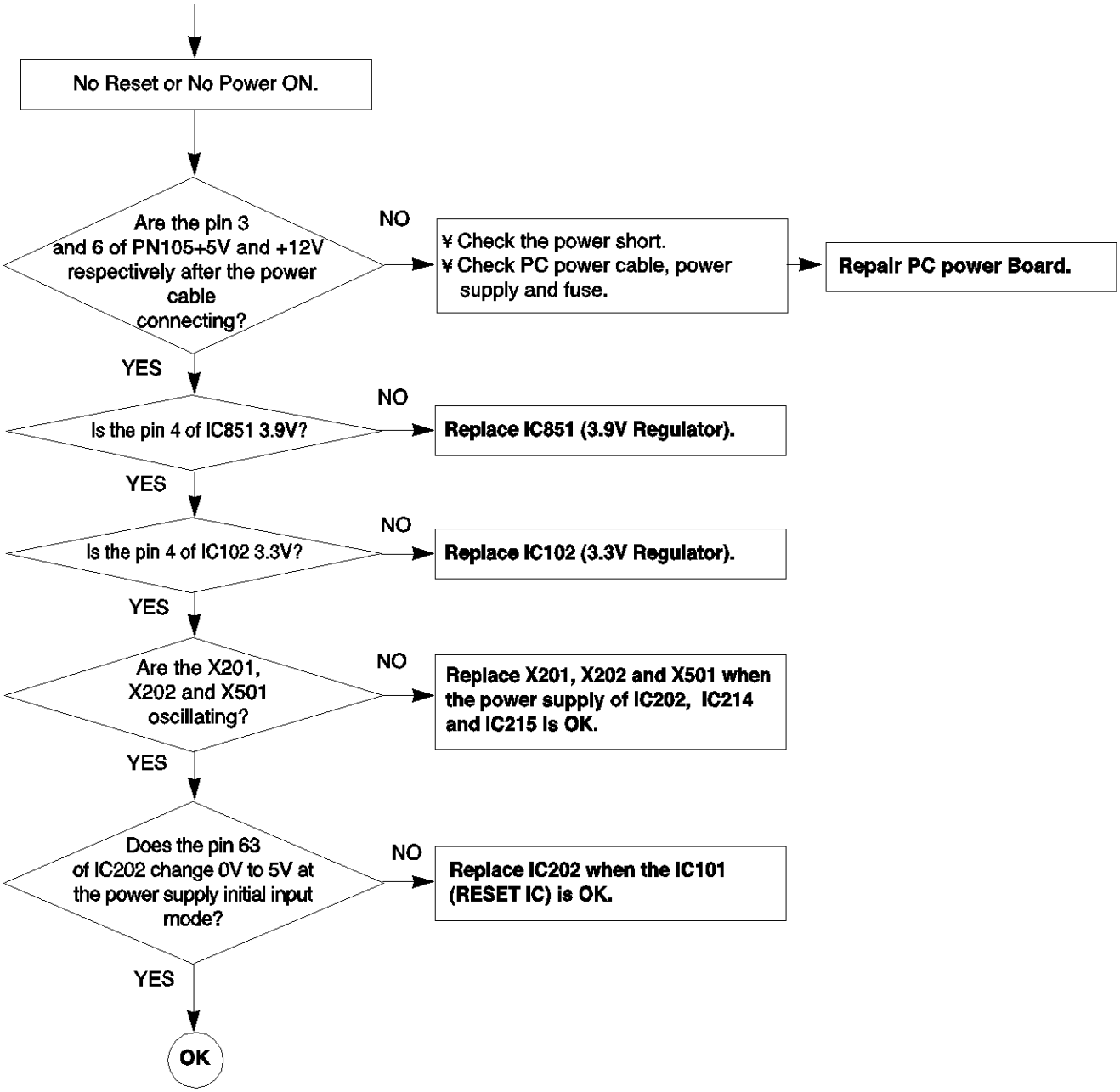
NO AUDIO(CDP JACK)

CURRENT DECK IS CDR

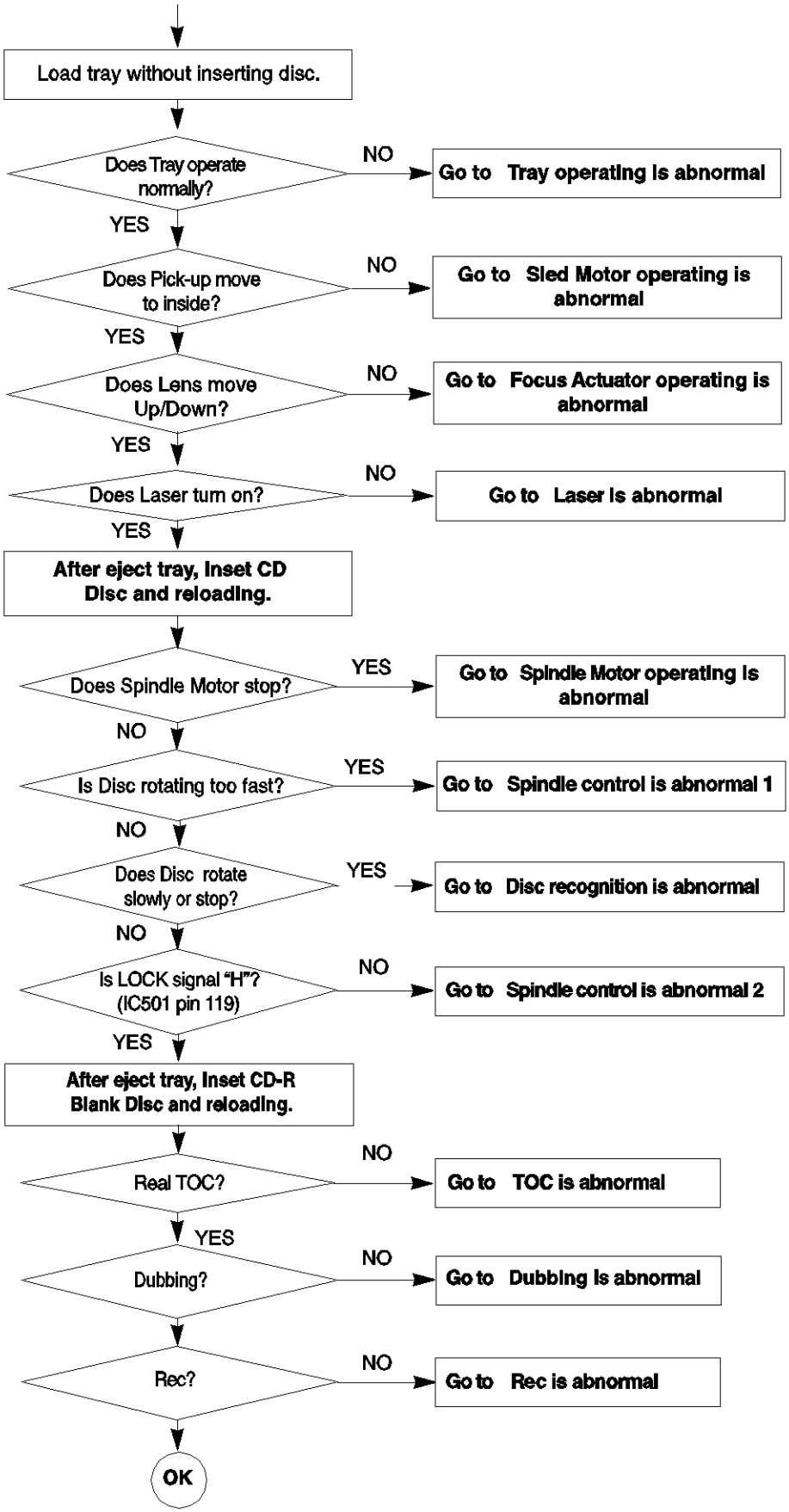


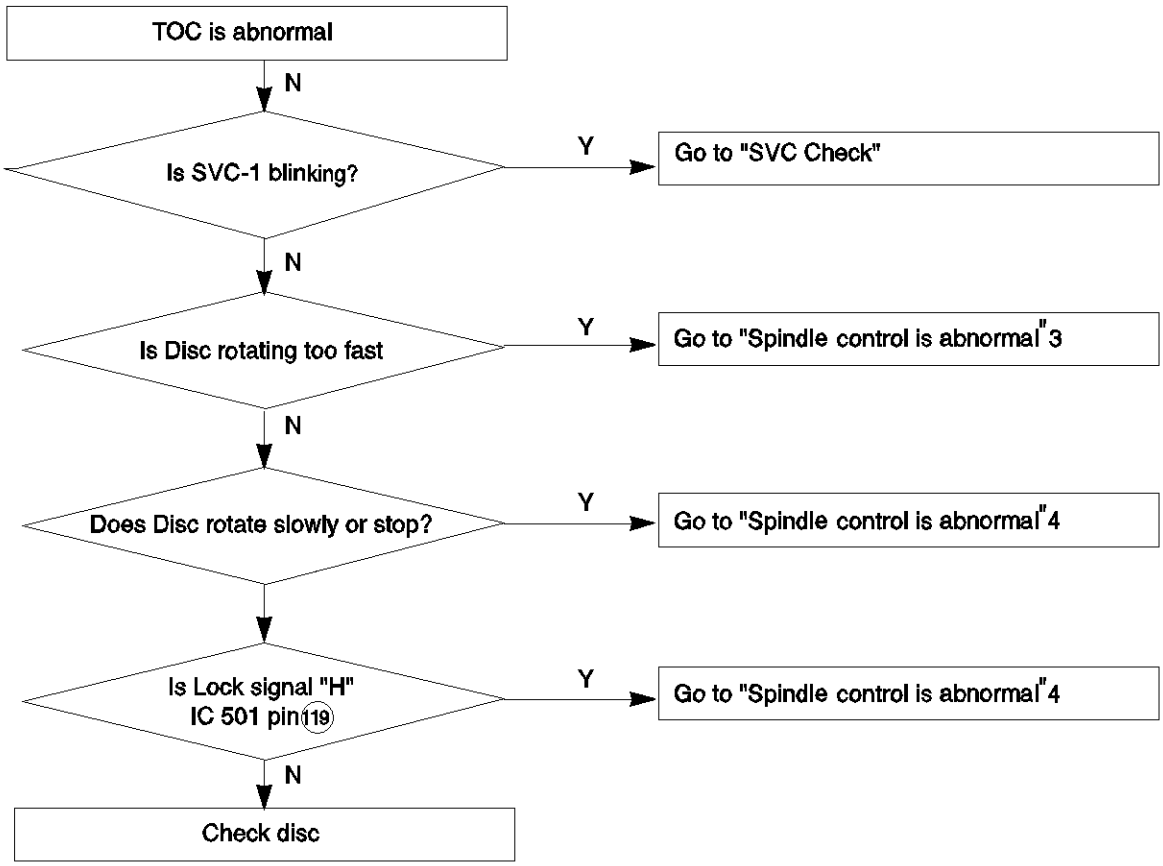
Reset or Power Check

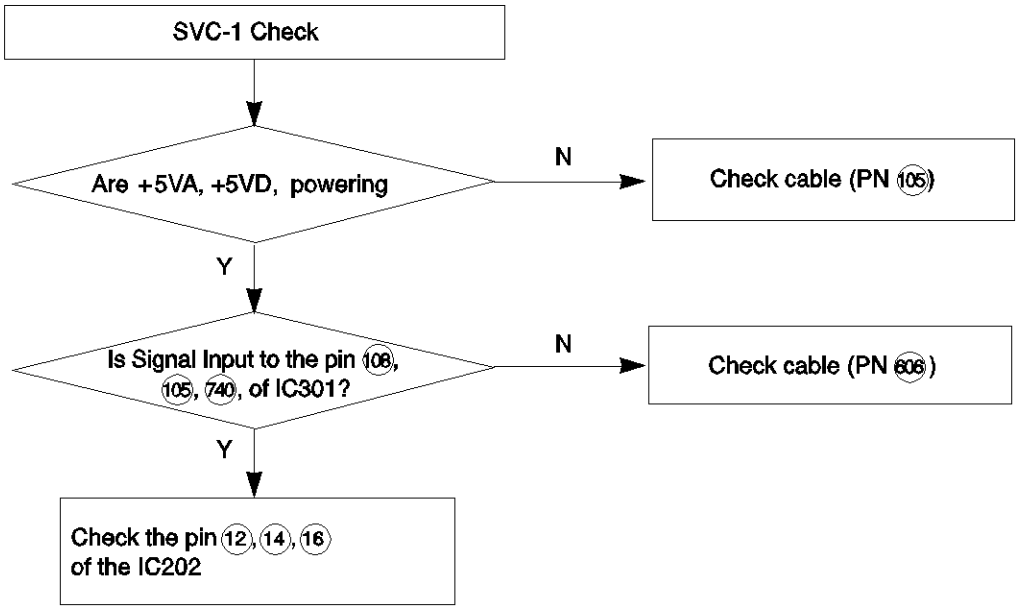
(Check it after connecting the power cable only on interface cable)

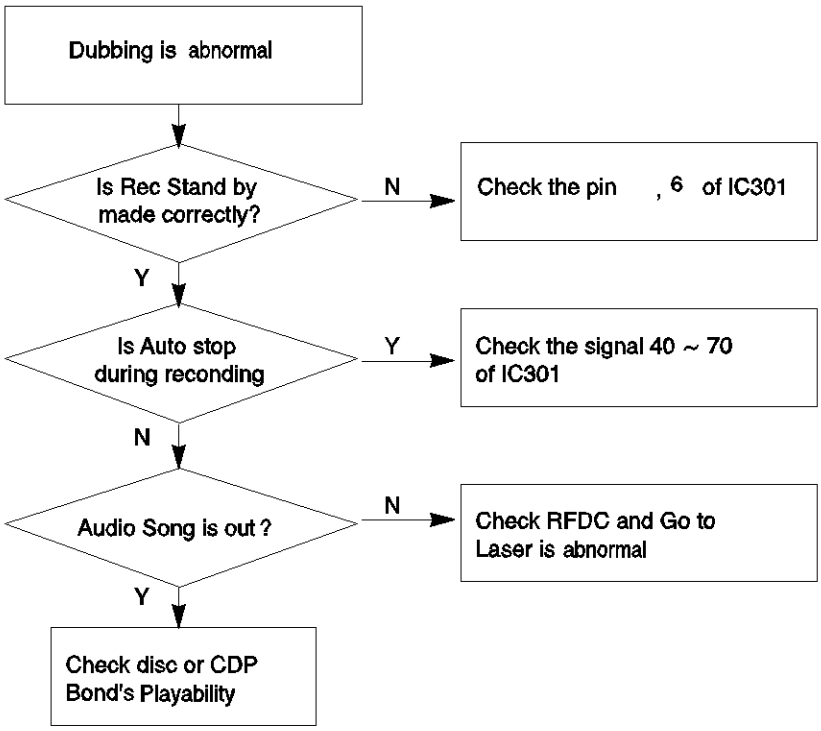

No Reset or No Power ON.
Are the pin 3 and 6 of PN105+5V and +12V respectively after the power cable connecting?
NO
¥ Check the power short.
¥ Check PC power cable, power supply and fuse.
Repair PC power Board.
YES
Is the pin 4 of IC851 3.9V?
NO
Replace IC851 (3.9V Regulator).
YES
Is the pin 4 of IC102 3.3V?
NO
Replace IC102 (3.3V Regulator).
YES
Are the X201, X202 and X501 oscillating?
NO
Replace X201, X202 and X501 when the power supply of IC202, IC214 and IC215 is OK.
YES
Does the pin 63 of IC202 change 0V to 5V at the power supply initial input mode?
NO
Replace IC202 when the IC101 (RESET IC) is OK.
YES
OK

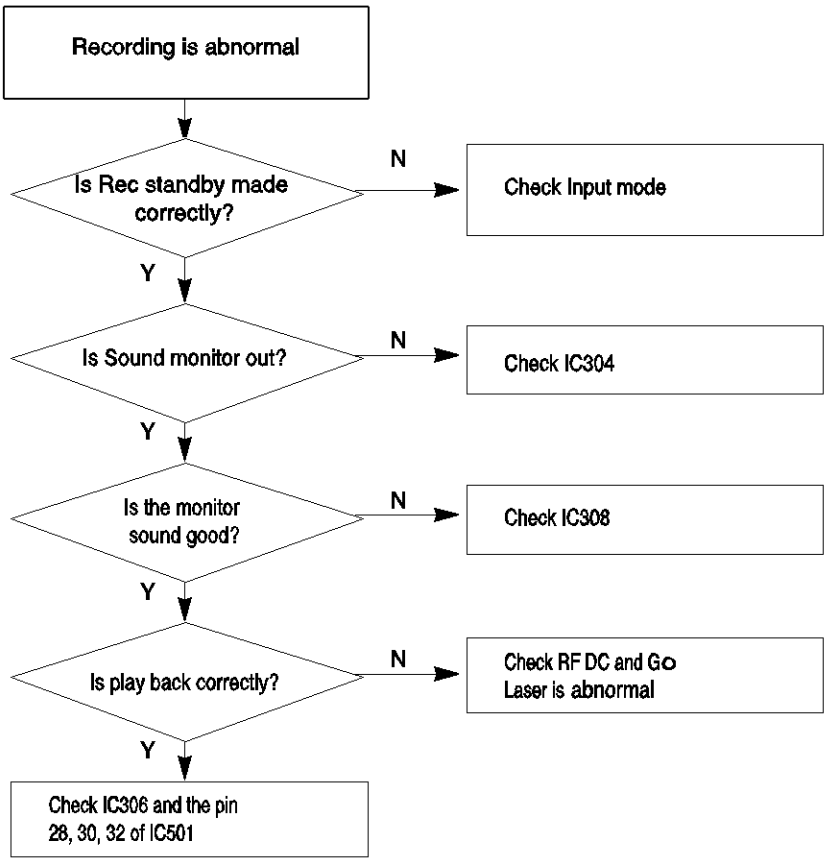
System Check



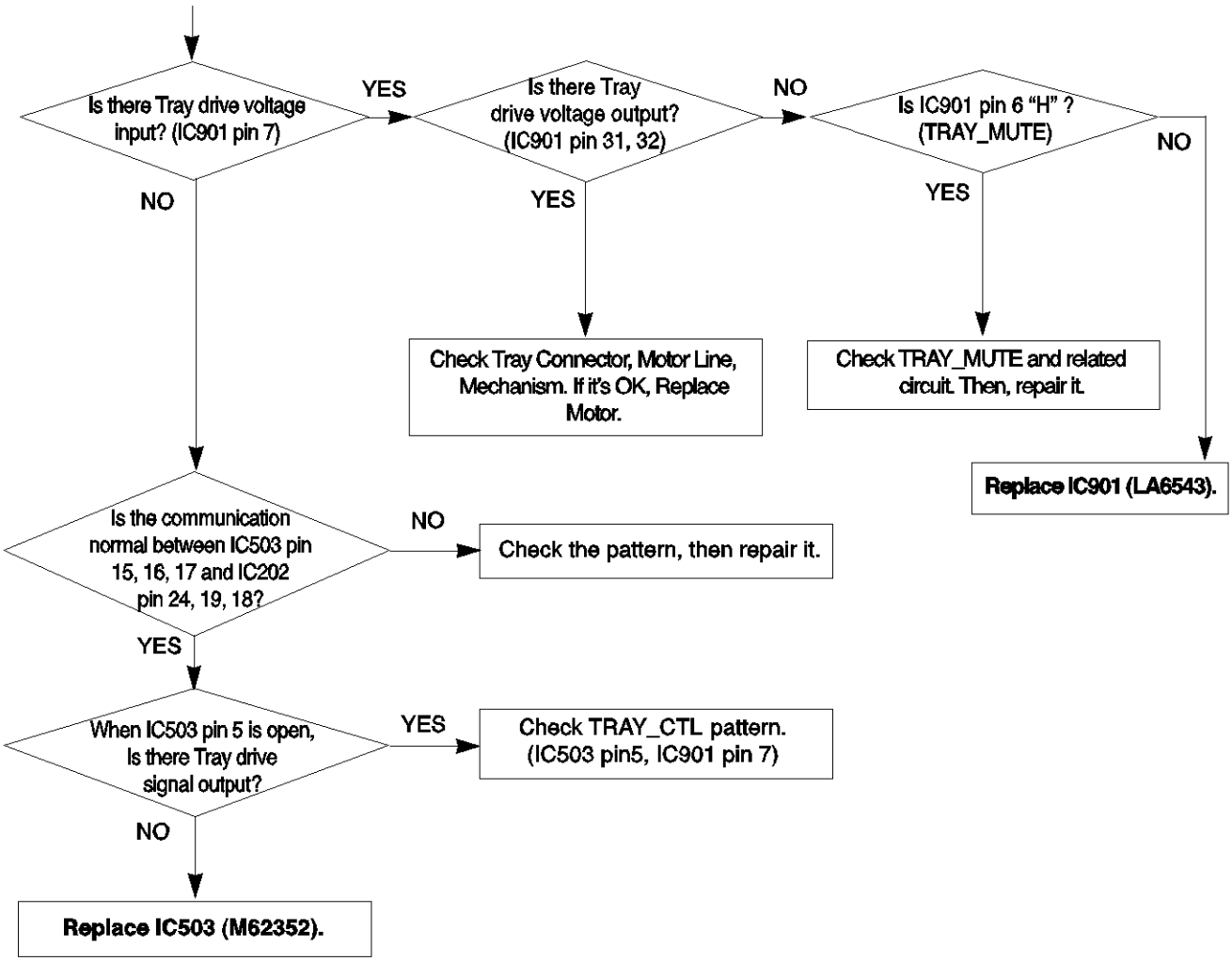

TOC is abnormal
N
Is SVC-1 blinking?
Y
Go to "SVC Check"
N
Is Disc rotating too fast
Y
Go to "Spindle control is abnormal" 3
N
Does Disc rotate slowly or stop?
Y
Go to "Spindle control is abnormal" 4
Is Lock signal "H"
IC 501 pin 119
Y
Go to "Spindle control is abnormal" 4
N
Check disc


SVC-1 Check
Are +5VA, +5VD, powering
N
Check cable (PN 105)
Y
Is Signal Input to the pin 108,
105, 740, of IC301?
N
Check cable (PN 606)
Y
Check the pin 12, 14, 16
of the IC202

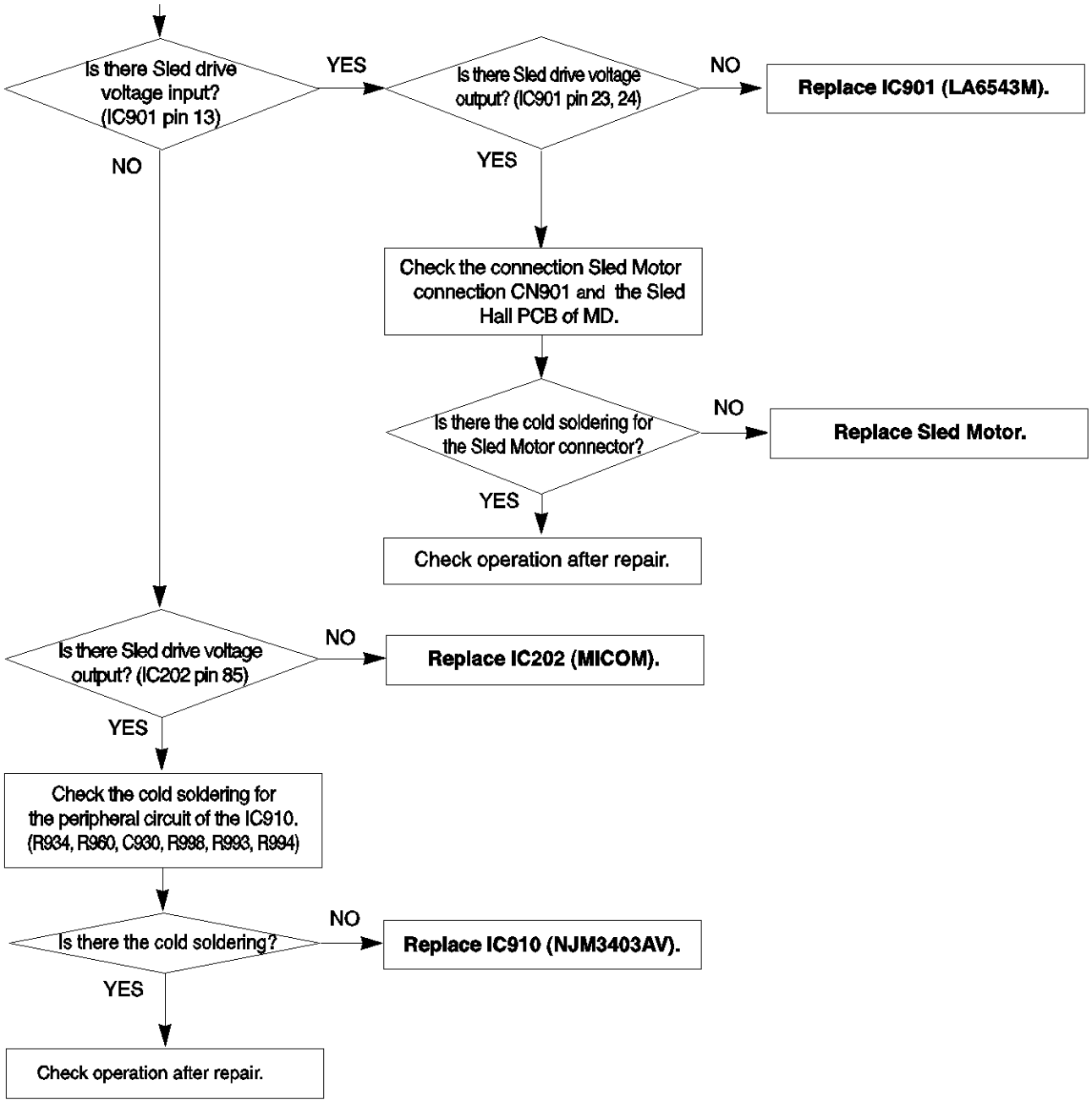

Dubbing is abnormal
Is Rec Stand by made correctly?
N
Check the pin , 6 of IC301
Y
Is Auto stop during reconding
Y
Check the signal 40 ~ 70 of IC301
N
Audio Song is out ?
N
Check RFDC and Go to Laser is abnormal
Y
Check disc or CDP Bond's Playability


Recording is abnormal
Is Rec standby made correctly?
N
Check Input mode
Y
Is Sound monitor out?
N
Check IC304
Y
Is the monitor sound good?
N
Check IC308
Y
Is play back correctly?
N
Check RF DC and Go Laser is abnormal
Y
Check IC306 and the pin 28, 30, 32 of IC501

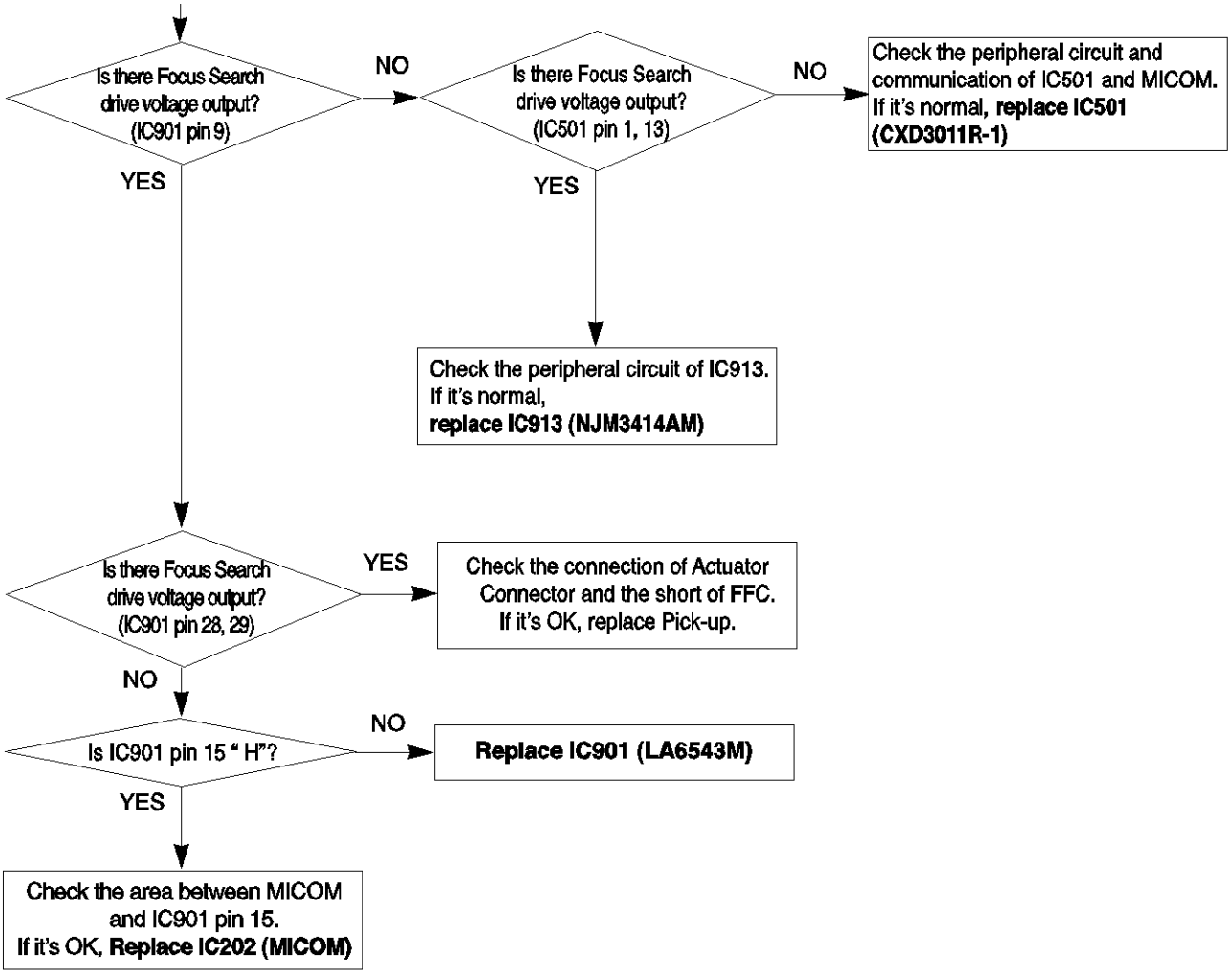
Tray Operation Abnormal (Tray open/close doesn't work)


Is there Tray drive voltage input? (IC901 pin 7)
YES
Is there Tray drive voltage output? (IC901 pin 31, 32)
NO
Is IC901 pin 6 "H" ? (TRAY_MUTE)
NO
YES
YES
NO
Check Tray Connector, Motor Line, Mechanism. If it's OK, Replace Motor.
Check TRAY_MUTE and related circuit. Then, repair it.
Replace IC901 (LA6543).
Is the communication normal between IC503 pin 15, 16, 17 and IC202 pin 24, 19, 18?
NO
Check the pattern, then repair it.
YES
When IC503 pin 5 is open, Is there Tray drive signal output?
YES
Check TRAY_CTL pattern. (IC503 pin5, IC901 pin 7)
NO
Replace IC503 (M62352).

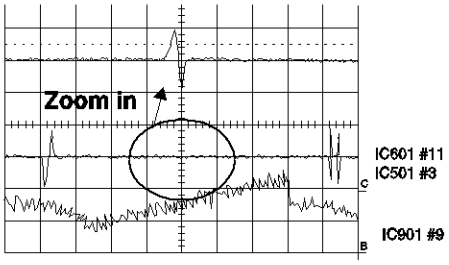
Sled Motor Operation Abnormal


Is there Sled drive voltage input? (IC901 pin 13)
YES
Is there Sled drive voltage output? (IC901 pin 23, 24)
NO
Replace IC901 (LA6543M).
NO
YES
Check the connection Sled Motor connection CN901 and the Sled Hall PCB of MD.
Is there the cold soldering for the Sled Motor connector?
NO
Replace Sled Motor.
YES
Check operation after repair.
Is there Sled drive voltage output? (IC202 pin 85)
NO
Replace IC202 (MICOM).
YES
Check the cold soldering for the peripheral circuit of the IC910. (R934, R960, C930, R998, R993, R994)
Is there the cold soldering?
NO
Replace IC910 (NJM3403AV).
YES
Check operation after repair.

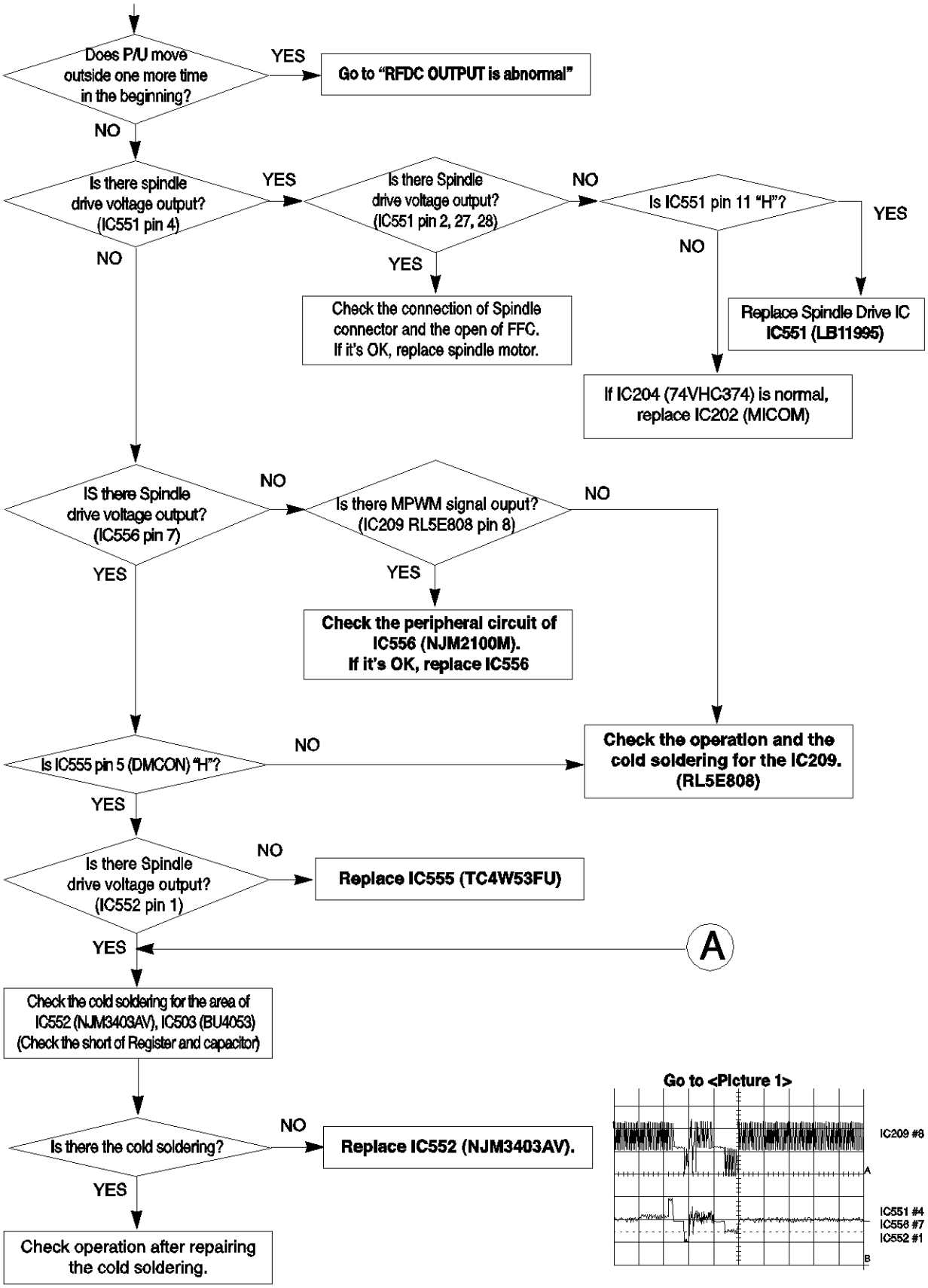
Focus Actuator Operation Abnormal


Is there Focus Search drive voltage output? (IC901 pin 9)
NO
Is there Focus Search drive voltage output? (IC501 pin 1, 13)
NO
Check the peripheral circuit and communication of IC501 and MICOM. If it's normal, replace IC501 (CXD3011R-1)
YES
YES
Check the peripheral circuit of IC913. If it's normal, replace IC913 (NJM3414AM)
Is there Focus Search drive voltage output? (IC901 pin 28, 29)
YES
Check the connection of Actuator Connector and the short of FFC. If it's OK, replace Pick-up.
NO
Is IC901 pin 15 " H"?
NO
Replace IC901 (LA6543M)
YES
Check the area between MICOM and IC901 pin 15. If it's OK, Replace IC202 (MICOM)

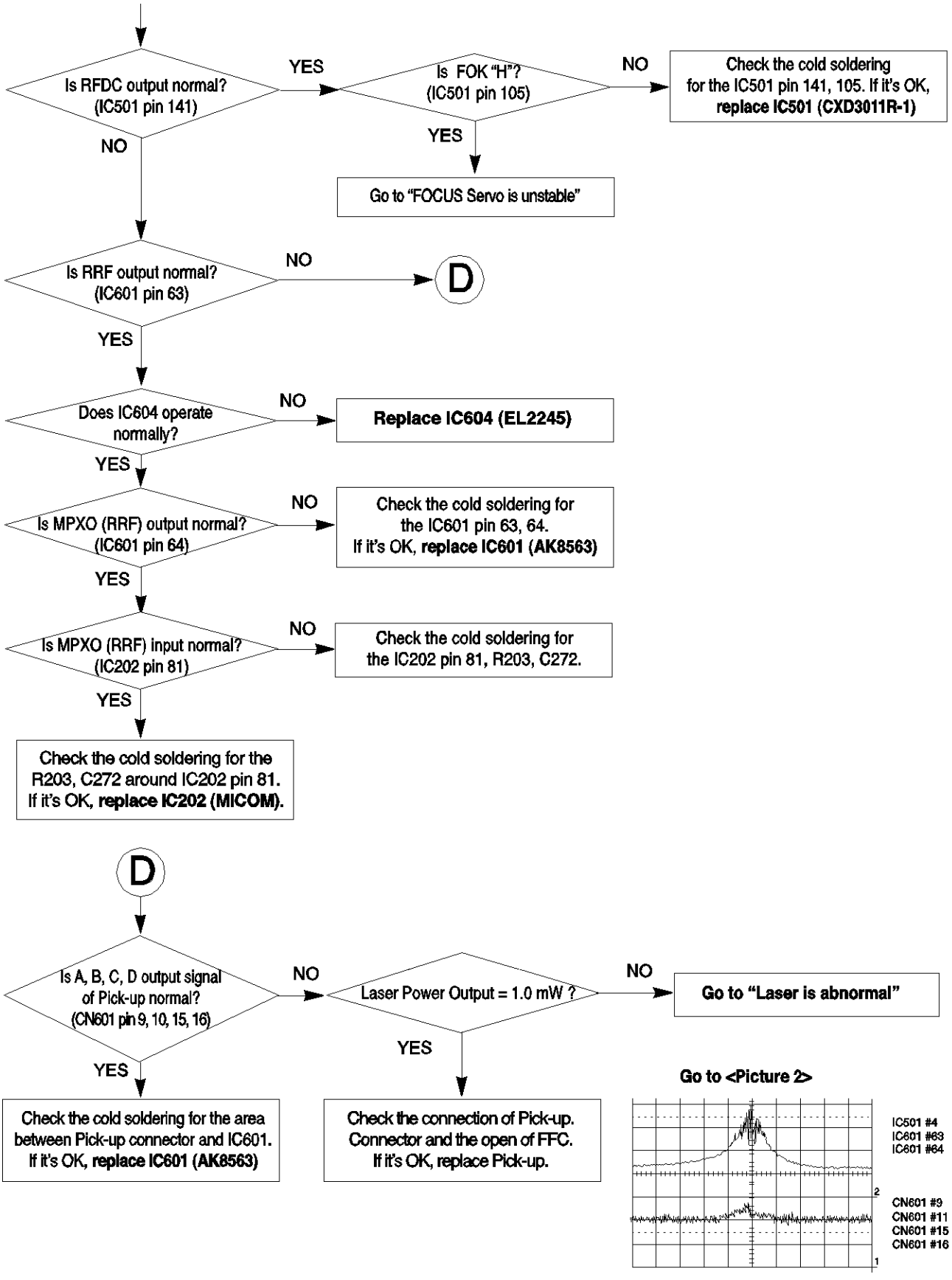
Go to <Picture 3>



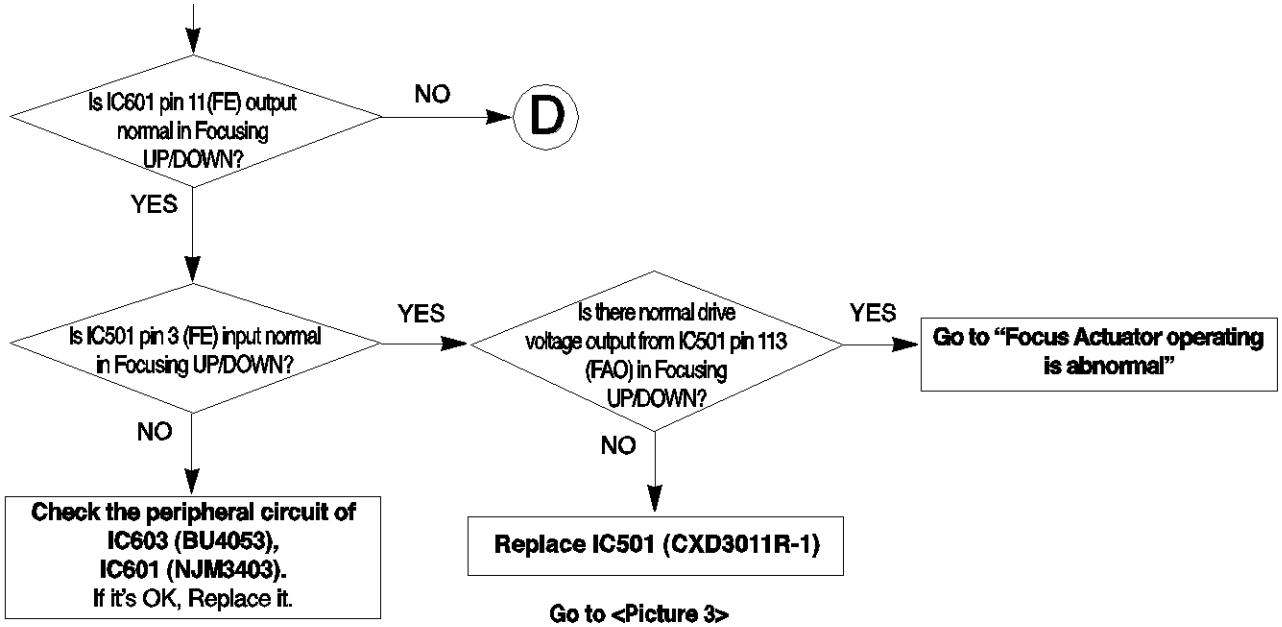
Spindle Motor Operation Abnormal


Does P/U move outside one more time in the beginning?
YES
Go to "RFDC OUTPUT is abnormal"
NO
Is there spindle drive voltage output? (IC551 pin 4)
YES
Is there Spindle drive voltage output? (IC551 pin 2, 27, 28)
NO
Is IC551 pin 11 "H"?
YES
NO
YES
Check the connection of Spindle connector and the open of FFC. If it's OK, replace spindle motor.
Replace Spindle Drive IC IC551 (LB11995)
If IC204 (74VHC374) is normal, replace IC202 (MICOM)
NO
IS there Spindle drive voltage output? (IC556 pin 7)
NO
Is there MPWM signal ouput? (IC209 RL5E808 pin 8)
NO
YES
YES
Check the peripheral circuit of IC556 (NJM2100M). If it's OK, replace IC556
Check the operation and the cold soldering for the IC209. (RL5E808)
Is IC555 pin 5 (DMCON) "H"?
NO
YES
Is there Spindle drive voltage output? (IC552 pin 1)
NO
Replace IC555 (TC4W53FU)
YES
A
Check the cold soldering for the area of IC552 (NJM3403AV), IC503 (BU4053) (Check the short of Register and capacitor)
Is there the cold soldering?
NO
Replace IC552 (NJM3403AV).
YES
Check operation after repairing the cold soldering.
Go to <Picture 1>
IC209 #8
A
IC551 #4
IC556 #7
IC552 #1
B

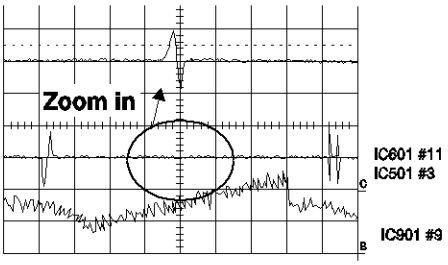
RFDC Output Operation Abnormal


Is RFDC output normal? (IC501 pin 141)
YES
Is FOK "H"? (IC501 pin 105)
NO
Check the cold soldering for the IC501 pin 141, 105. If it's OK, replace IC501 (CXD3011R-1)
YES
Go to "FOCUS Servo is unstable"
NO
Is RRF output normal? (IC601 pin 63)
NO
D
YES
Does IC604 operate normally?
NO
Replace IC604 (EL2245)
YES
Is MPXO (RRF) output normal? (IC601 pin 64)
NO
Check the cold soldering for the IC601 pin 63, 64. If it's OK, replace IC601 (AK8563)
YES
Is MPXO (RRF) input normal? (IC202 pin 81)
NO
Check the cold soldering for the IC202 pin 81, R203, C272.
YES
Check the cold soldering for the R203, C272 around IC202 pin 81. If it's OK, replace IC202 (MICOM).
D
Is A, B, C, D output signal of Pick-up normal? (CN601 pin 9, 10, 15, 16)
NO
Laser Power Output = 1.0 mW ?
NO
Go to "Laser is abnormal"
YES
YES
Check the cold soldering for the area between Pick-up connector and IC601. If it's OK, replace IC601 (AK8563)
Check the connection of Pick-up. Connector and the open of FFC. If it's OK, replace Pick-up.
Go to <Picture 2>
IC501 #4
IC601 #63
IC601 #64
CN601 #9
CN601 #11
CN601 #15
CN601 #16
2
1

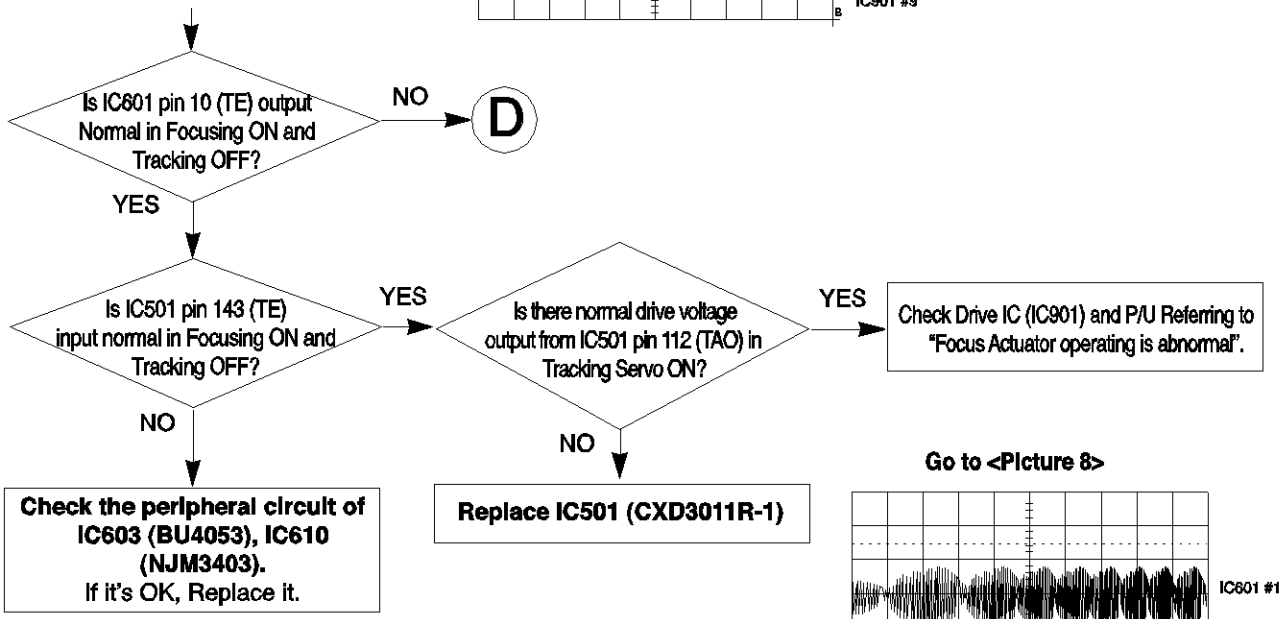
Focus Servo Unstable


Is IC601 pin 11(FE) output normal in Focusing UP/DOWN?
NO
D
YES
Is IC501 pin 3 (FE) input normal in Focusing UP/DOWN?
YES
Is there normal drive voltage output from IC501 pin 113 (FAO) in Focusing UP/DOWN?
YES
Go to "Focus Actuator operating is abnormal"
NO
NO
Check the peripheral circuit of IC603 (BU4053), IC601 (NJM3403). If it's OK, Replace it.
Replace IC501 (CXD3011R-1)

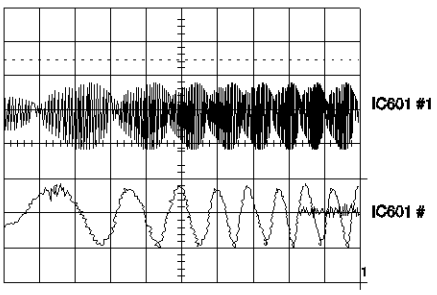
Go to <Picture 3>



Tracking Servo Unstable


Is IC601 pin 10 (TE) output Normal in Focusing ON and Tracking OFF?
NO
D
YES
Is IC501 pin 143 (TE) input normal in Focusing ON and Tracking OFF?
YES
Is there normal drive voltage output from IC501 pin 112 (TAO) in Tracking Servo ON?
YES
Check Drive IC (IC901) and P/U Referring to "Focus Actuator operating is abnormal".
NO
NO
Check the peripheral circuit of IC603 (BU4053), IC610 (NJM3403). If it's OK, Replace it.
Replace IC501 (CXD3011R-1)

Go to <Picture 8>



Spindle Control Abnormal1

Spindle Control Abnormal2

Is there RFAC Signal input? (IC501 pin 13)

YES

NO

Is MDP signal output normal? (IC501 pin 117)

NO

YES

Does Track Servo operate normally?

NO

YES

Check the peripheral circuit of IC501. If it's OK, **replace IC501 (CXD3011R-1)**.

Is there spindle drive voltage output in IC556 pin 1?

NO

Check the peripheral circuit of IC556. If it's OK, **replace IC506 (NJM2100)**.

YES

Is there spindle drive voltage ouput in IC552 pin 1?

YES

A

Go to "Tracking Servo is unstable"

NO

Is IC555 pin 5 "H"?

YES

Replace IC555 (TC4W53FU).

NO

Check Disc Recognition. If it's OK, Replace IC555 and IC209 after checking.

Is IC601 pin 29 output normal? (DECEFM)

YES

Replace IC507 (TC7SH04F).

NO

Check the output status of IC601 pin 29 when it open.

Normal?

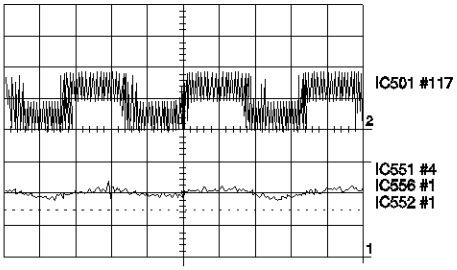
NO

Replace IC601 (AK8563).

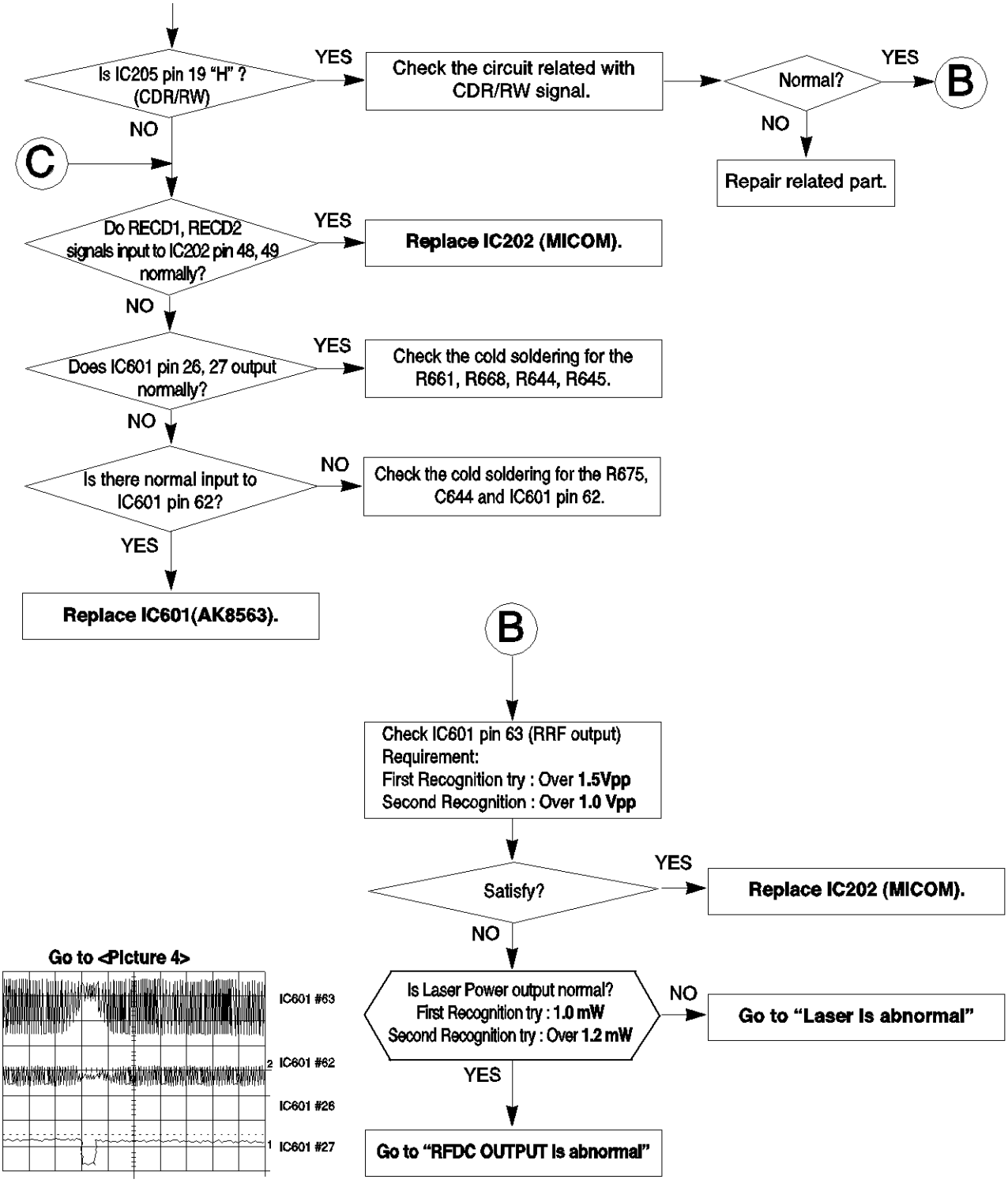
YES

Check the status of R and C peripheral circuit of IC605 (BU4066) and IC507.

Go to <Picture 5>



Disc Recognition Abnormal



Spindle Control Abnormal1

Is IC555 pin 5 "L"? (DMCON)

YES

NO

C

Spindle Control Abnormal2

Is Spindle drive voltage output (IC556 pin 7)

YES

A

NO

Is Spindle drive voltage output normal? (IC209 pin 8 MPWM)

YES

Check the peripheral circuit of IC556. If it's OK, **replace IC556 (NJM2100M).**

NO

Is there normal input to IC209 pin 174 (WBLIN) ?

YES

Check the peripheral circuit of IC209. If it's OK, **replace IC209 (RL5E808B).**

NO

Is IC601 pin 22 (ATFG) output normal?

YES

Check PCB between IC209 and IC601.

NO

Is IC601 pin 46 (ATFM) output normal?

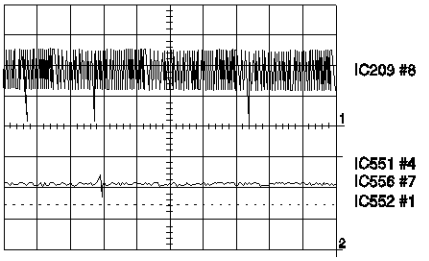
YES

Replace IC601 (AK8563).

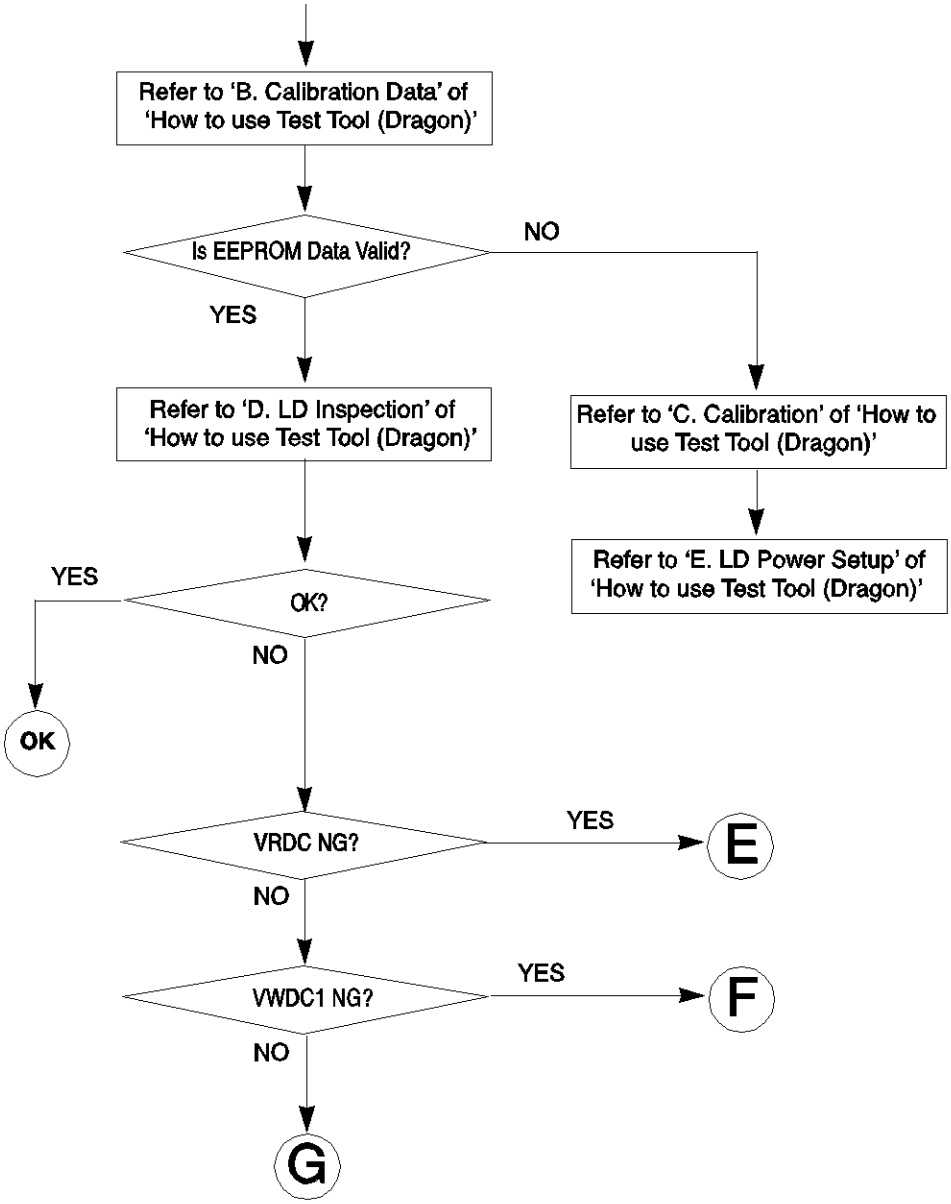
NO

D

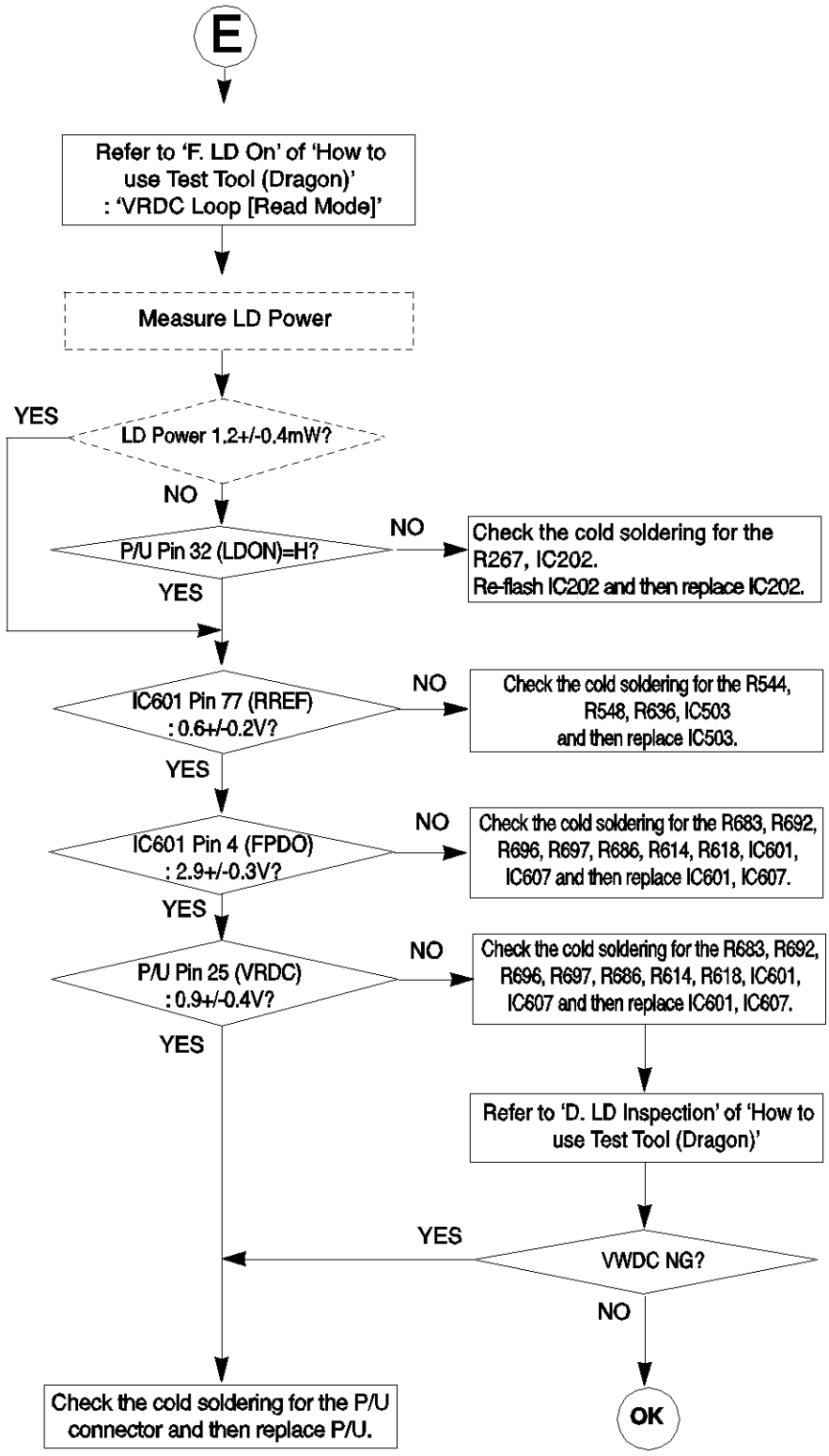
Go to <Picture 6>



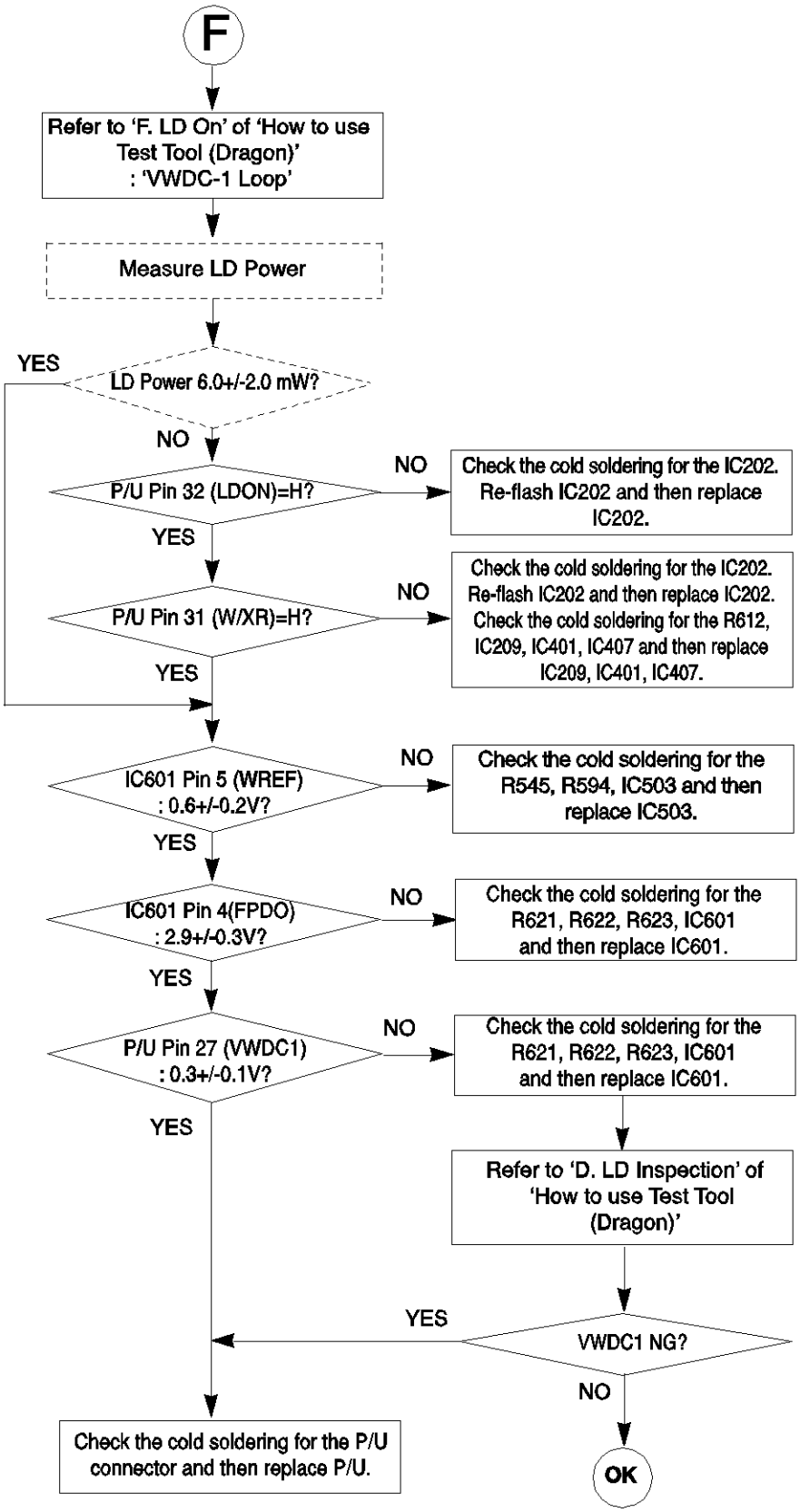
Laser Operation Abnormal

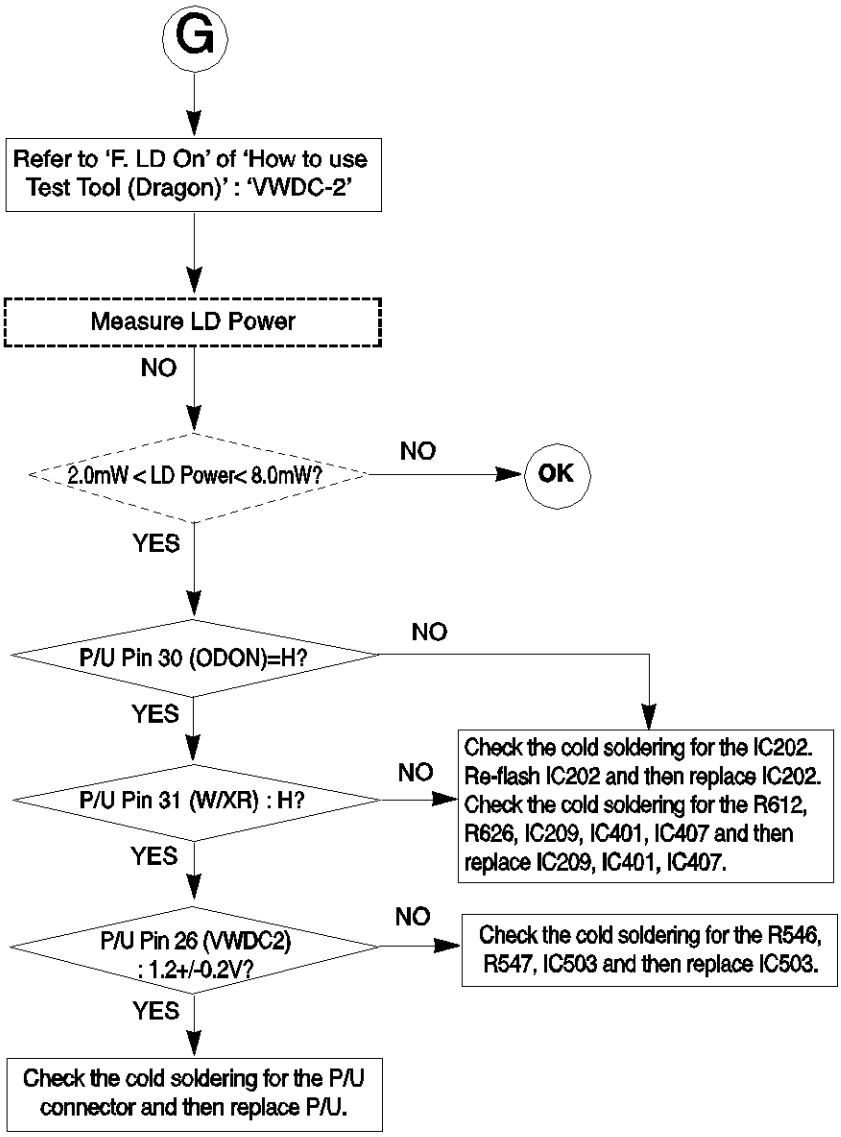


LD Check (no reading)

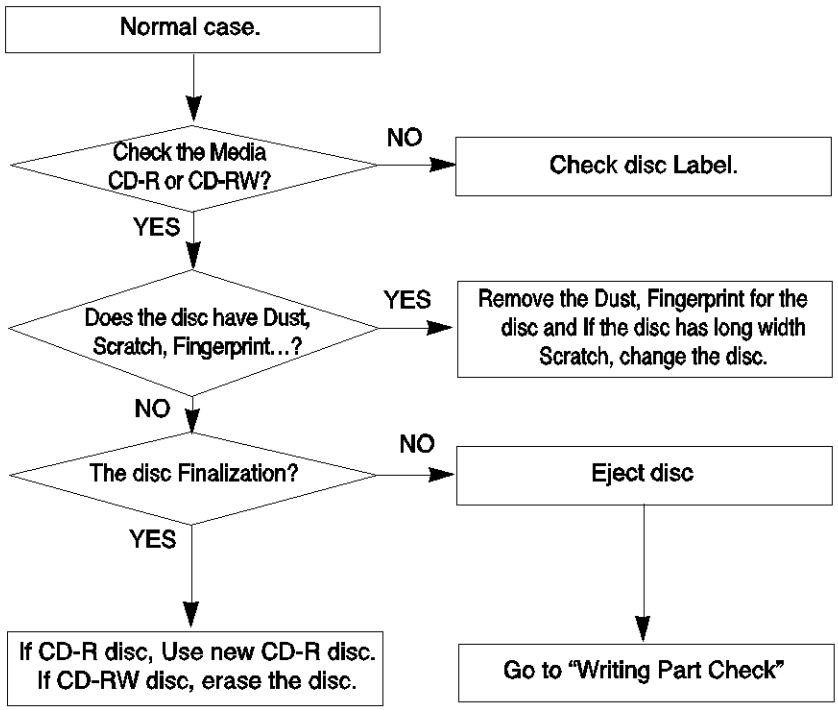

E
Refer to 'F. LD On' of 'How to use Test Tool (Dragon)' : 'VRDC Loop [Read Mode]'
Measure LD Power
YES
LD Power 1.2+/-0.4mW?
NO
P/U Pin 32 (LDON)=H?
NO
Check the cold soldering for the R267, IC202. Re-flash IC202 and then replace IC202.
YES
IC601 Pin 77 (RREF) : 0.6+/-0.2V?
NO
Check the cold soldering for the R544, R548, R636, IC503 and then replace IC503.
YES
IC601 Pin 4 (FPDO) : 2.9+/-0.3V?
NO
Check the cold soldering for the R683, R692, R696, R697, R686, R614, R618, IC601, IC607 and then replace IC601, IC607.
YES
P/U Pin 25 (VRDC) : 0.9+/-0.4V?
NO
Check the cold soldering for the R683, R692, R696, R697, R686, R614, R618, IC601, IC607 and then replace IC601, IC607.
YES
Refer to 'D. LD Inspection' of 'How to use Test Tool (Dragon)'
YES
VWDC NG?
NO
Check the cold soldering for the P/U connector and then replace P/U.
OK

LD Check (no recording)


F
Refer to 'F. LD On' of 'How to use Test Tool (Dragon)' : 'VWDC-1 Loop'
Measure LD Power
YES
LD Power 6.0+/-2.0 mW?
NO
NO
P/U Pin 32 (LDON)=H?
Check the cold soldering for the IC202. Re-flash IC202 and then replace IC202.
YES
NO
P/U Pin 31 (W/XR)=H?
Check the cold soldering for the IC202. Re-flash IC202 and then replace IC202. Check the cold soldering for the R612, IC209, IC401, IC407 and then replace IC209, IC401, IC407.
YES
NO
IC601 Pin 5 (WREF) : 0.6+/-0.2V?
Check the cold soldering for the R545, R594, IC503 and then replace IC503.
YES
NO
IC601 Pin 4(FPDO) : 2.9+/-0.3V?
Check the cold soldering for the R621, R622, R623, IC601 and then replace IC601.
YES
NO
P/U Pin 27 (VWDC1) : 0.3+/-0.1V?
Check the cold soldering for the R621, R622, R623, IC601 and then replace IC601.
YES
Refer to 'D. LD Inspection' of 'How to use Test Tool (Dragon)'
YES
VWDC1 NG?
NO
Check the cold soldering for the P/U connector and then replace P/U.
OK


G
Refer to 'F. LD On' of 'How to use Test Tool (Dragon)' : 'VWDC-2'
Measure LD Power
NO
2.0mW < LD Power< 8.0mW?
NO
OK
YES
P/U Pin 30 (ODON)=H?
NO
YES
P/U Pin 31 (W/XR) : H?
NO
Check the cold soldering for the IC202. Re-flash IC202 and then replace IC202. Check the cold soldering for the R612, R626, IC209, IC401, IC407 and then replace IC209, IC401, IC407.
YES
P/U Pin 26 (VWDC2) : 1.2+/-0.2V?
NO
Check the cold soldering for the R546, R547, IC503 and then replace IC503.
YES
Check the cold soldering for the P/U connector and then replace P/U.

Write Failure



Writing Part Check

Go to "Laser is abnormal"

Load tray with CD-R or RW Disc.

Run the Writing Tool (Easy CD Creator).

Run the Writing with Tool (Easy CD Creator).

Does the Display Toggle (on/off) when Writing start (OPC operation)?

NO

Does the IC204 (74VHC374) pin 15 Toggle (on/off) during Writing?

NO

YES

YES

Check the cold soldering for IC204 (74VHC374) pin 15, R337, Q302, R334, LED2.

Check the cold soldering for IC204 (74VHC374) and then replace IC204. Check communication line between IC204 and IC202 (MICOM).

Does finished the writing without Error?

NO

YES

Is the written file read normally?

NO

Eject Tray.

YES

Go to "ALPC Logic Circuit Check".

Is the re-written file read normally?

YES

NO

Is the IC614 pin 7 (ROPC2) 'pulse' when CD-R writing?

NO

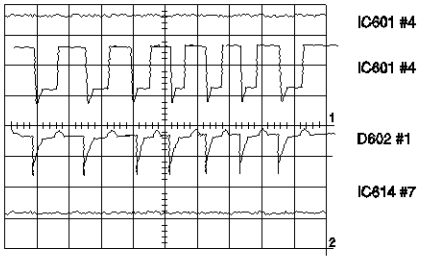
Check the cold soldering for IC614, R274, IC209 pin 164 and then replace IC614, IC209.

YES

Go to "BETA Measurement Circuit Check"

OK

Go to <Picture 9>



ALPC Logic Circuit Check

Refer to 'F. LD On' of 'How to use Test Tool (Dragon)' : 'CD-R Recording Mode'

Is the IC205 pin 19 (CDR/RW) 'H'?
- NO → Check the cold soldering for IC205 pin 19. Check communication line between IC205 and IC202 (MICOM).
- YES ↓

Is the IC205 pin 16 (WR/RE) 'H'?
- NO → Check the cold soldering for IC205 pin 16. Check communication line between IC205 and IC202 (MICOM).
- YES ↓

Is the IC209 (RL5E808B) pin 166 (WGATE) 'H'?
- NO → Check the cold soldering for IC407, IC209 pin 166. Check communication line between IC202 and IC209 (RL5E808B).
- YES ↓

Is the IC601 pin 43 (WLDON) 'H'?
- NO → Check the cold soldering for IC401, IC407, R401, R417.
- YES ↓

Is the IC404 pin 3 (CDR_WR) 'H'?
- NO → Check the cold soldering for IC403, IC404, IC406.
- YES ↓

Is the IC404 pin 8 (WREN) & pin 11 (RFGUP)'L'?
- NO → Check the cold soldering for R416, IC404, IC405.
- YES ↓

Is the IC209 pin 152 (EFM1), 153 (EFM2), 162 (RESAMP), 163 (ROPC1), 164 (ROPC2) 'pulse'?
- NO → Check the cold soldering for IC209 pin 152, 153, 162, 163, 164. Check the cold soldering for IC402, IC407.
- YES ↓

Is the IC601 pin 39 (WFPDSH),38 (RFPDSH), 37 (WBLSH), 36 (SPDSH), 35 (MPDSH) 'pulse'?
- NO → Check the cold soldering for IC601 pin 39, 38, 37, 36, 35. Check the cold soldering for R684, R651, R649, R497, R496, IC403, IC401.
- YES ↓

Is the CN601 pin 30 (ODON), 31 (W/XR) 'pulse'?
- NO → Check the cold soldering for R626, R612, R655, R657, C401, IC407, CN601 pin 30, 31.
- YES ↓

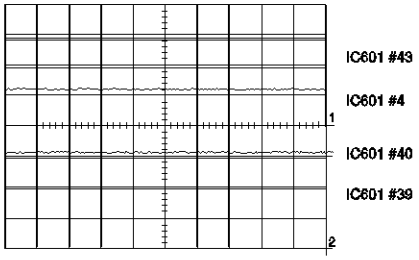
Dragon : Do LD 'Off'

YES ↓

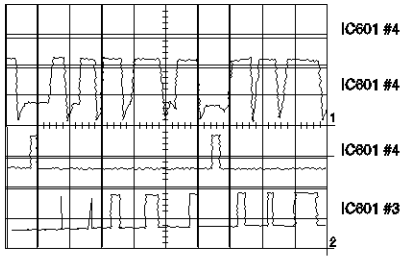
K

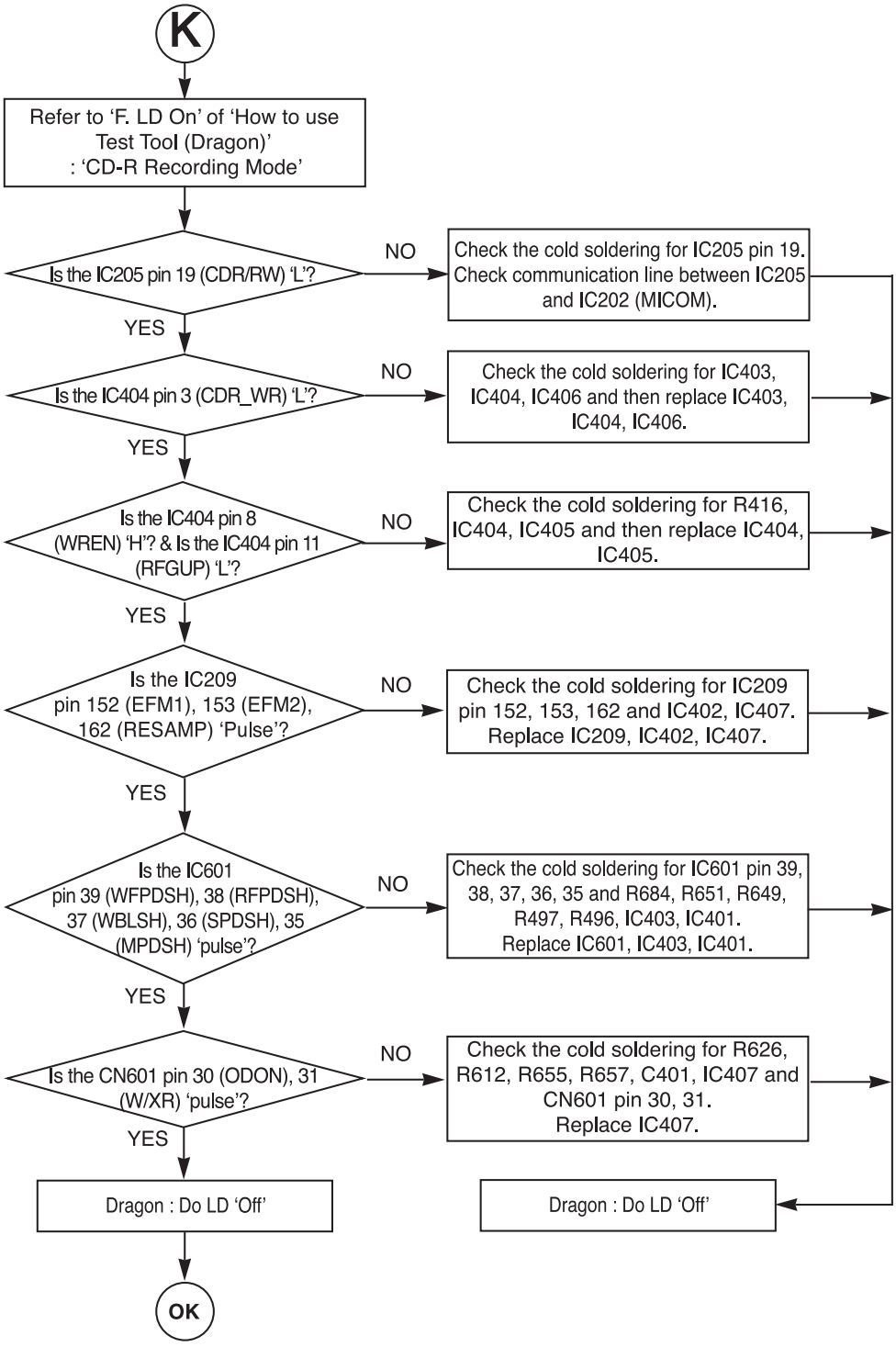
Dragon : Do LD 'Off'

Go to <Picture 10>

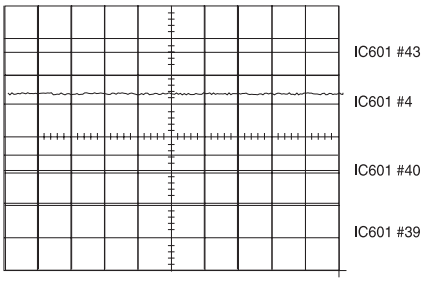


Go to <Picture 11>

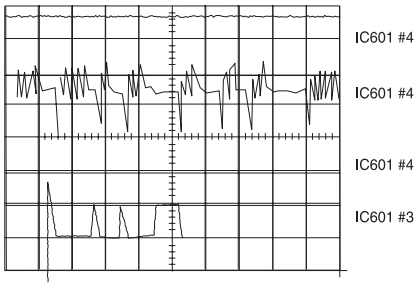


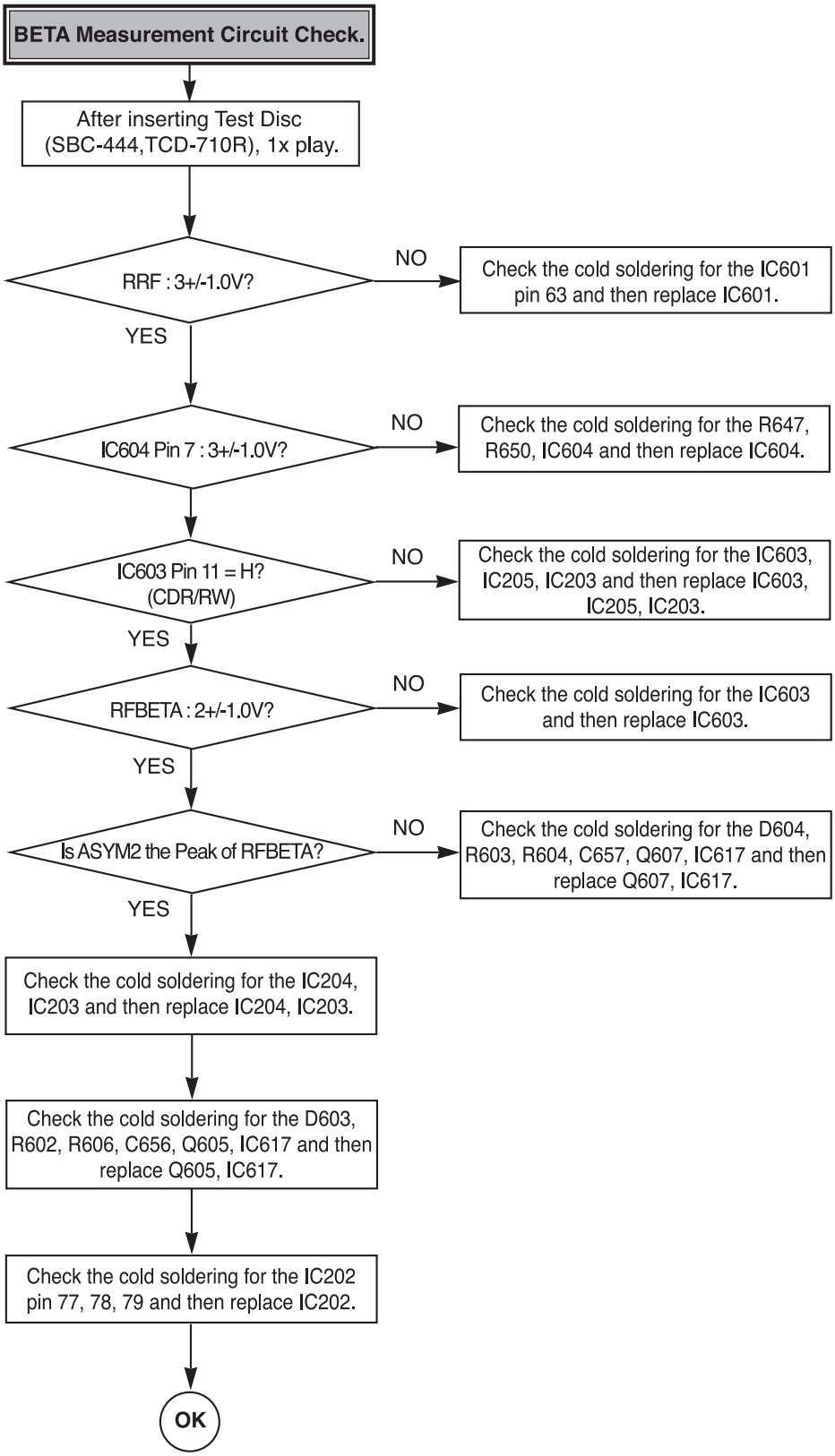

K
Refer to 'F. LD On' of 'How to use Test Tool (Dragon)' : 'CD-R Recording Mode'
Is the IC205 pin 19 (CDR/RW) 'L'?
NO
Check the cold soldering for IC205 pin 19. Check communication line between IC205 and IC202 (MICOM).
YES
Is the IC404 pin 3 (CDR_WR) 'L'?
NO
Check the cold soldering for IC403, IC404, IC406 and then replace IC403, IC404, IC406.
YES
Is the IC404 pin 8 (WREN) 'H'? & Is the IC404 pin 11 (RFGUP) 'L'?
NO
Check the cold soldering for R416, IC404, IC405 and then replace IC404, IC405.
YES
Is the IC209 pin 152 (EFM1), 153 (EFM2), 162 (RESAMP) 'Pulse'?
NO
Check the cold soldering for IC209 pin 152, 153, 162 and IC402, IC407. Replace IC209, IC402, IC407.
YES
Is the IC601 pin 39 (WFPDSH), 38 (RFPDSH), 37 (WBLSH), 36 (SPDSH), 35 (MPDSH) 'pulse'?
NO
Check the cold soldering for IC601 pin 39, 38, 37, 36, 35 and R684, R651, R649, R497, R496, IC403, IC401. Replace IC601, IC403, IC401.
YES
Is the CN601 pin 30 (ODON), 31 (W/XR) 'pulse'?
NO
Check the cold soldering for R626, R612, R655, R657, C401, IC407 and CN601 pin 30, 31. Replace IC407.
YES
Dragon : Do LD 'Off'
Dragon : Do LD 'Off'
OK

Go to <Picture 12>



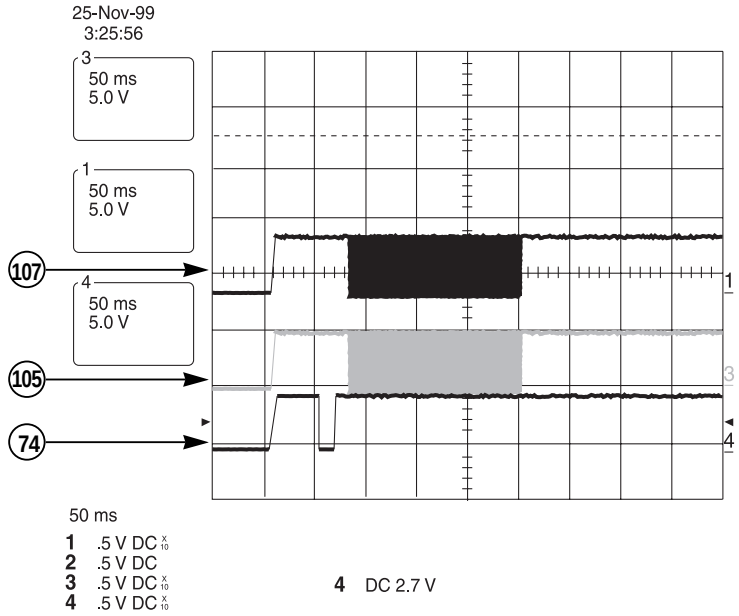
Go to <Picture 13>




BETA Measurement Circuit Check.
After inserting Test Disc (SBC-444,TCD-710R), 1x play.
RRF : 3+/-1.0V?
NO
Check the cold soldering for the IC601 pin 63 and then replace IC601.
YES
IC604 Pin 7 : 3+/-1.0V?
NO
Check the cold soldering for the R647, R650, IC604 and then replace IC604.
IC603 Pin 11 = H? (CDR/RW)
NO
Check the cold soldering for the IC603, IC205, IC203 and then replace IC603, IC205, IC203.
YES
RFBETA : 2+/-1.0V?
NO
Check the cold soldering for the IC603 and then replace IC603.
YES
Is ASYM2 the Peak of RFBETA?
NO
Check the cold soldering for the D604, R603, R604, C657, Q607, IC617 and then replace Q607, IC617.
YES
Check the cold soldering for the IC204, IC203 and then replace IC204, IC203.
Check the cold soldering for the D603, R602, R606, C656, Q605, IC617 and then replace Q605, IC617.
Check the cold soldering for the IC202 pin 77, 78, 79 and then replace IC202.
OK

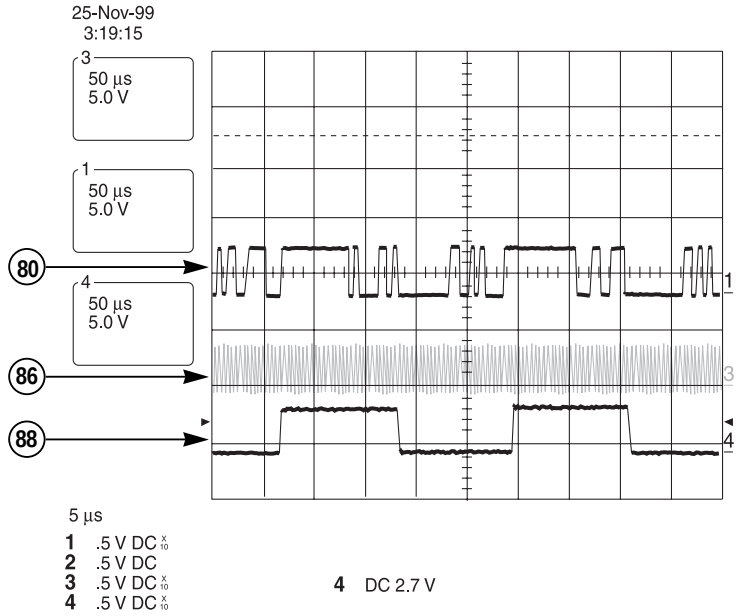
- **ASIC**

IC 301(74,105,107)



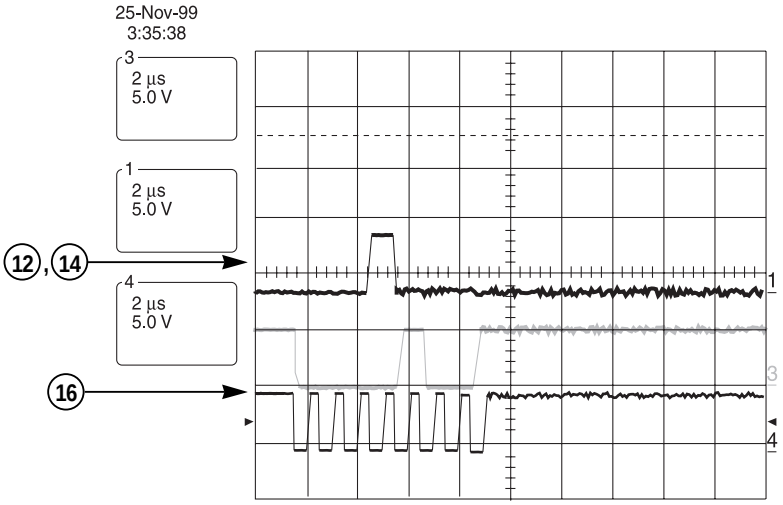
- **BITSTR~1.**

IC 301(80,86,88)



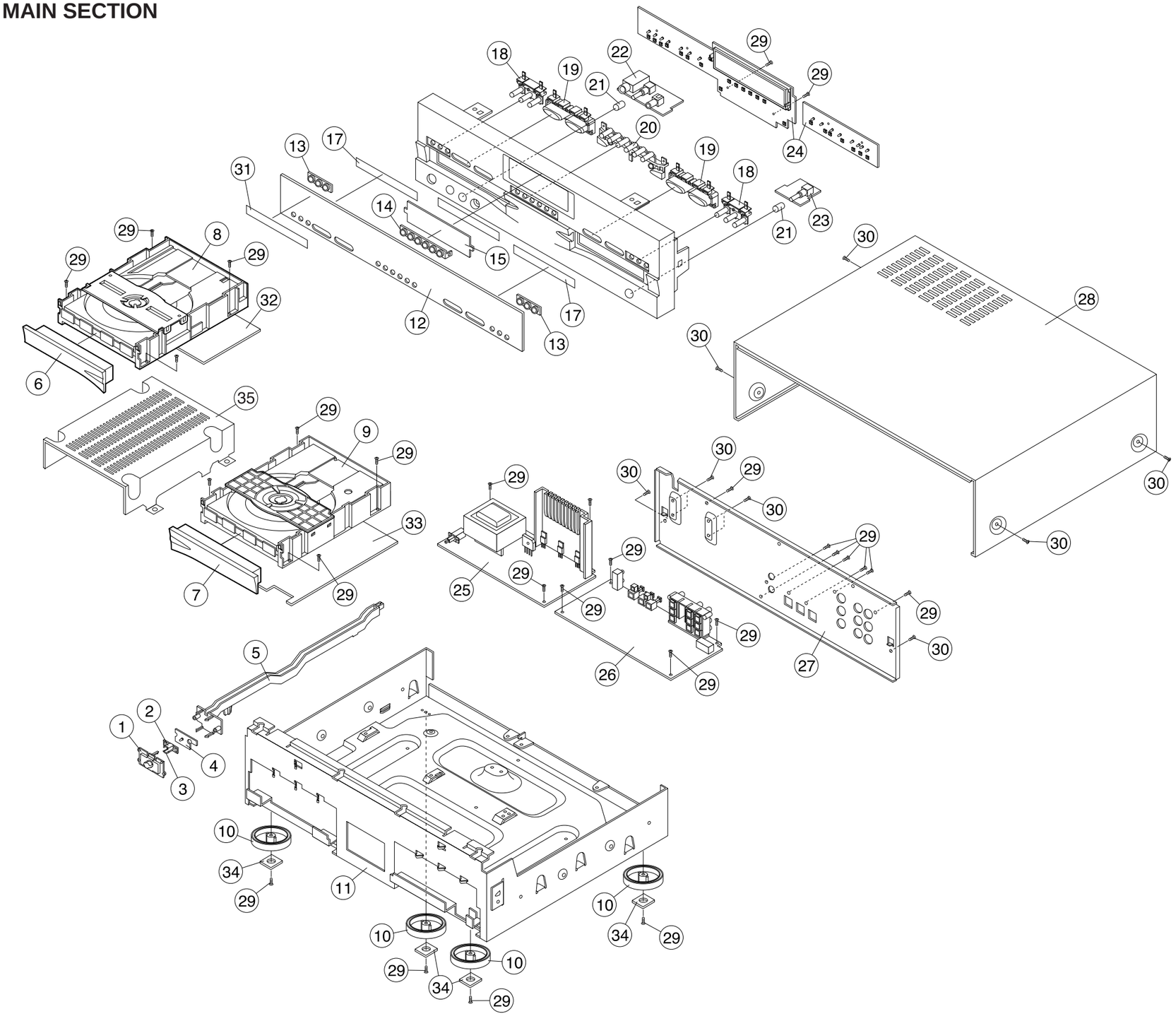
- **U-COM**

IC 202(⑫ , ⑭ , ⑯)



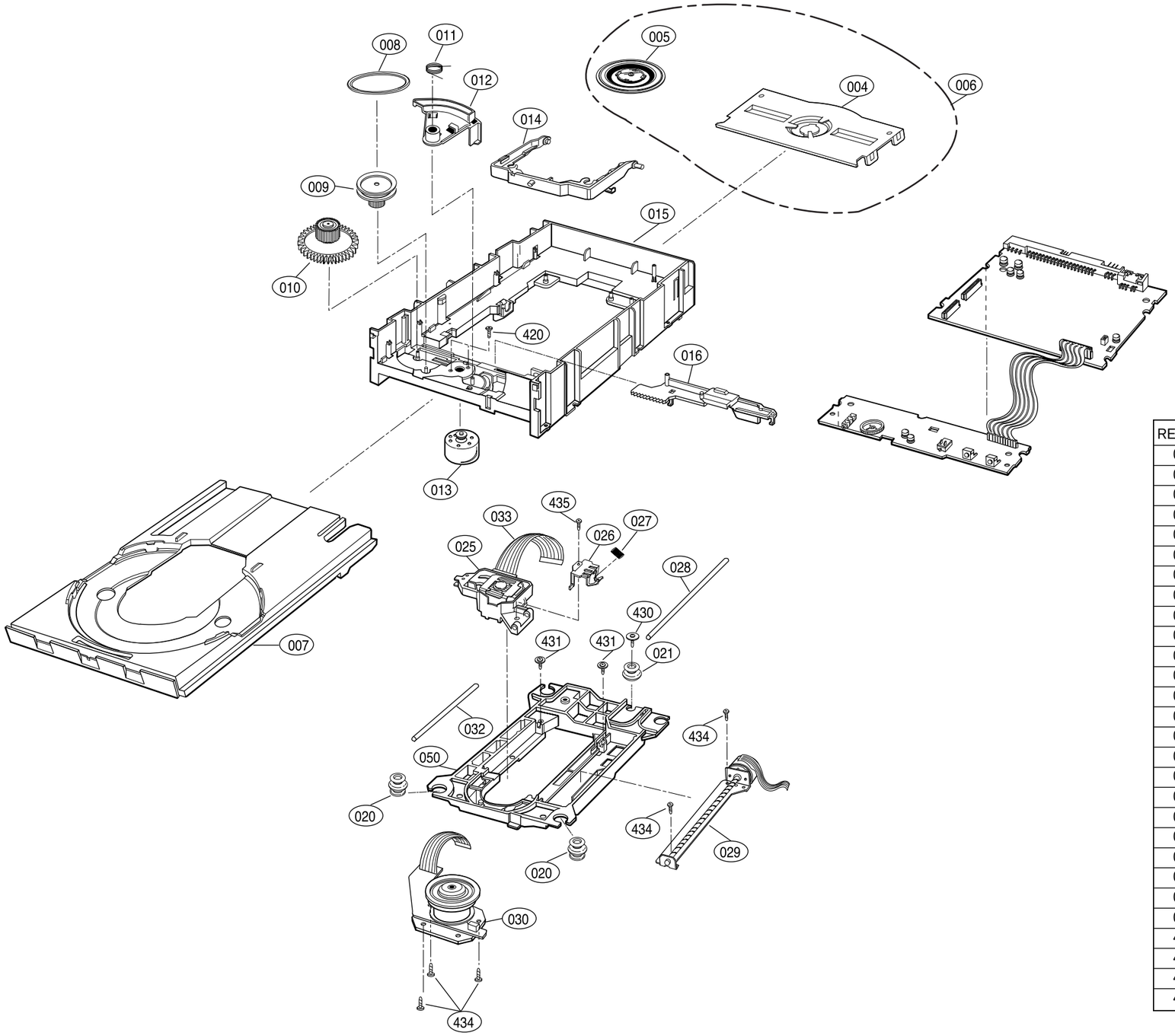
EXPLODED VIEW/PARTS LIST

- **MAIN SECTION**



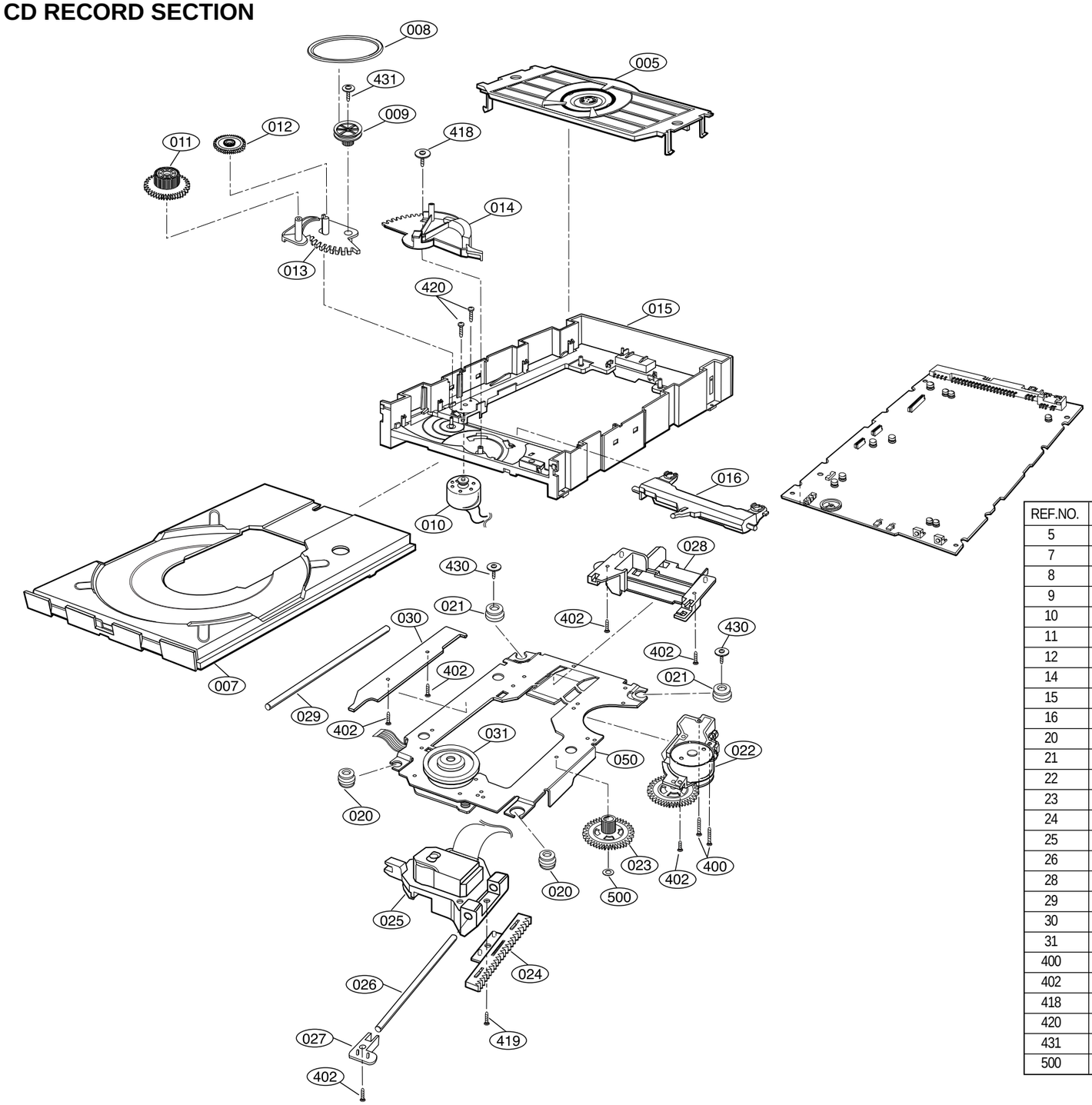
REF.NO.	PART NO	DESCRIPTION
1	4940S-6939A	KNOB POWER
2	3790S-M079A	WINDOW POWER
3	3300S-X002A	PLATE PET
4	6871RZ1963A	PCB ASSY LED
5	4510S-1019A	LEVER POWER
6	3580S-C108A	DOOR PLAY
7	3580S-C105A	DOOR ACDR
8	6721R-0301A	MECHA Q1(PLAYER)
9	4405H-1068C	MECHA E2
10	3610S-0192A	FOOT BOTTOM
11	3140S-P913B	CHASSIS MAIN
12	3790S-M072A	WINDOW FL
13	4350S-0001A	RING 3 KEY
14	4350S-0002A	RING 6 KEY
15	3858S-X170A	SHEET FL
16	3720S-M113A	PANEL FRONT
17	3858S-X171A	SHEET LCD
18	4940S-6938A	KNOB PLAY 3K
19	4940S-6937A	KNOB SEESAW 4K
20	4940S-6940A	KNOB REC 8K
21	4940S-6941A	KNOB VOLUME
22	6871RJ1963A	PCB ASSY HEADPHONE
23	6871RU0001A	PCB ASSY VOLUME
24	6871SF42GAA	PCB ASSY FL/KEY
25	6871RP42NAA	PCB ASSY POWER
26	6871S-429AB	PCB ASSY IO
27	3720S-P014A	PANEL BACK
28	3140S-P911C	CHASSIS TOP
29	353-046K	SCREW(M3)
30	353-633A	SCREW(M4)
31	3846S-0208A	MARK BADGE
32	6871S-423AB	PCB PLAY
33	6871S-42QAA	PCB REC
34	4766R-0003A	FELT FOOT
35	3550S-1027B	COVER-RW DECK

• CD PLAY SECTION



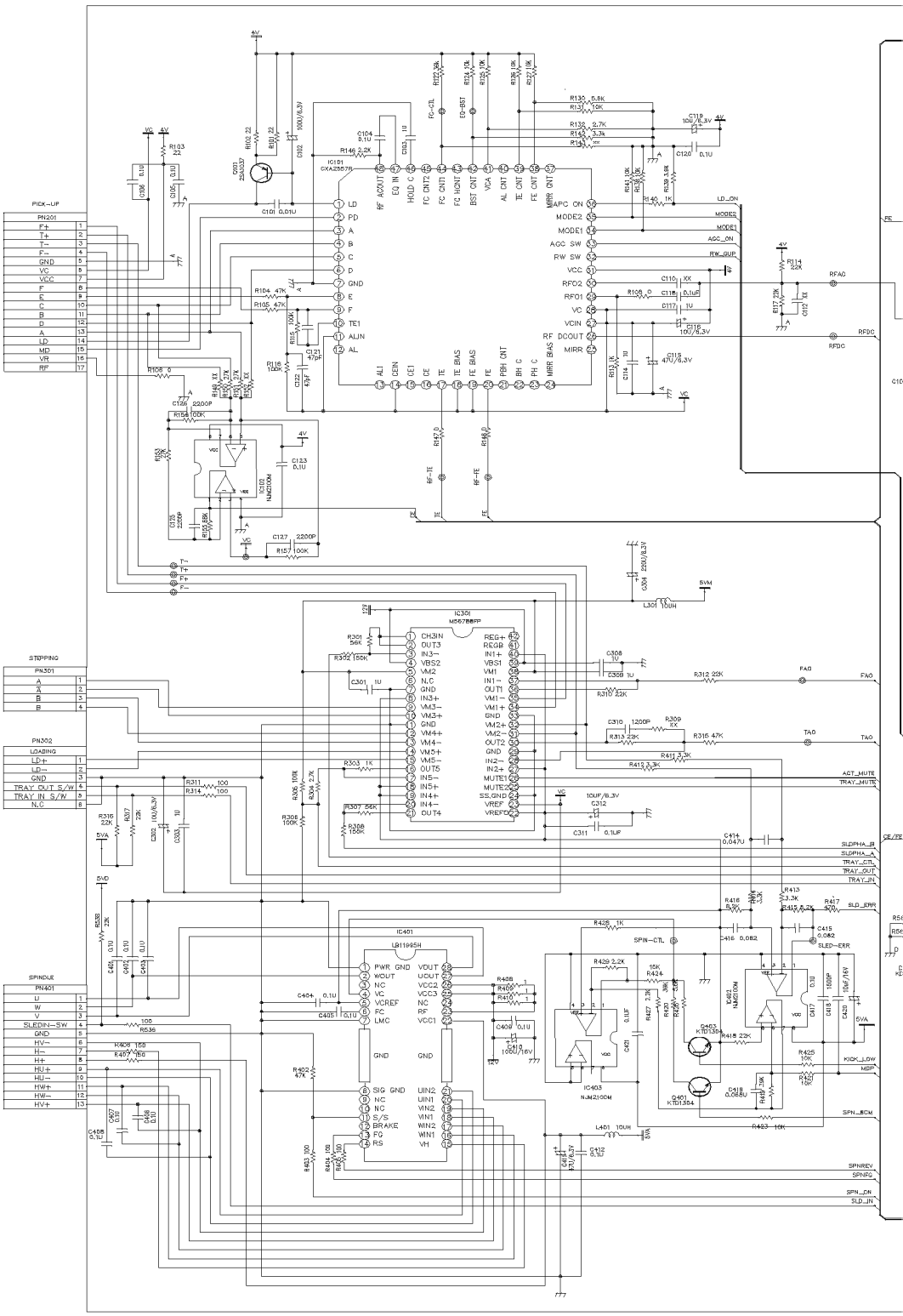
REF.NO.	PART NO	DESCRIPTION
004	4930H-1061A	HOLDER ASSY CLAMP(Q1, ACDR)
005	4861R-D004A	CLAMP ASSY Q1 & E2 ACDR
006	4931R-0033A	HOLDER ASSY CLAMP(Q1, ACDR)
007	3390H-1016C	TRAY DISC, BLACK)
008	4400H-1009A	BELT GM-RT 1332A
009	4560H-1005A	PULLEY MOTER(GM-R512)
010	4470H-115A	GEAR LOADING(Q1)
011	4970H-1087A	SPRING LEVER SWITCH
012	4510H-1033A	LEVER SWITCH(Q1)
013	4680HP-2001A	MOTER(MECH) RF-300CH-11440 M/C
014	3040H-1056A	BASE UP/DOWN(Q1)
015	3040H-1055A	BASE MAIN(Q1)
016	4974H-1034A	GUIDE UP/DOWN(Q1)
020	5040H-1053A	RUBBER GM-RT1332A(F)
021	5040H-1052A	RUBBER GM-RT1332A(R)
025	6716S-E001A	PICK UP SF-P151EXVA SANYO ACDR
026	4974H-1039A	GUIDE FEED
027	4970H-1086A	SPRING FEED
028	4370H-1024C	SHAFT P/U
029	4680HP-50028	MOTOR 15S1R10F6NC3 MATSUSHITA STEPPI
030	4680HB-1019A	MOTOR GCS-L32A LGEC SPINDLE
032	4370H-1025B	SHAFT P/U
033	6850HD-1L16A	CABLE, FLEXIBLE 2896-A-1.0-17(05*65)160 BANDO
050	3040H-1057A	BASE P/U(Q1)
420	4000H-1006B	SCREW + D1.7 4.5MM SWRCH16A/ZNY 4MM
431	1SSXXH-1004A	SCREW + D1.7 5MM SWRCH16A/ZNY 3.5MM
434	1SSXXH-1007B	SCREW + D2.0 6MM SWRCH16A/ZNBK 4MM 1
435	1SSXXH-1011B	SCREW + D1.7 6MM SWRCH16A/NIY 3.5MM

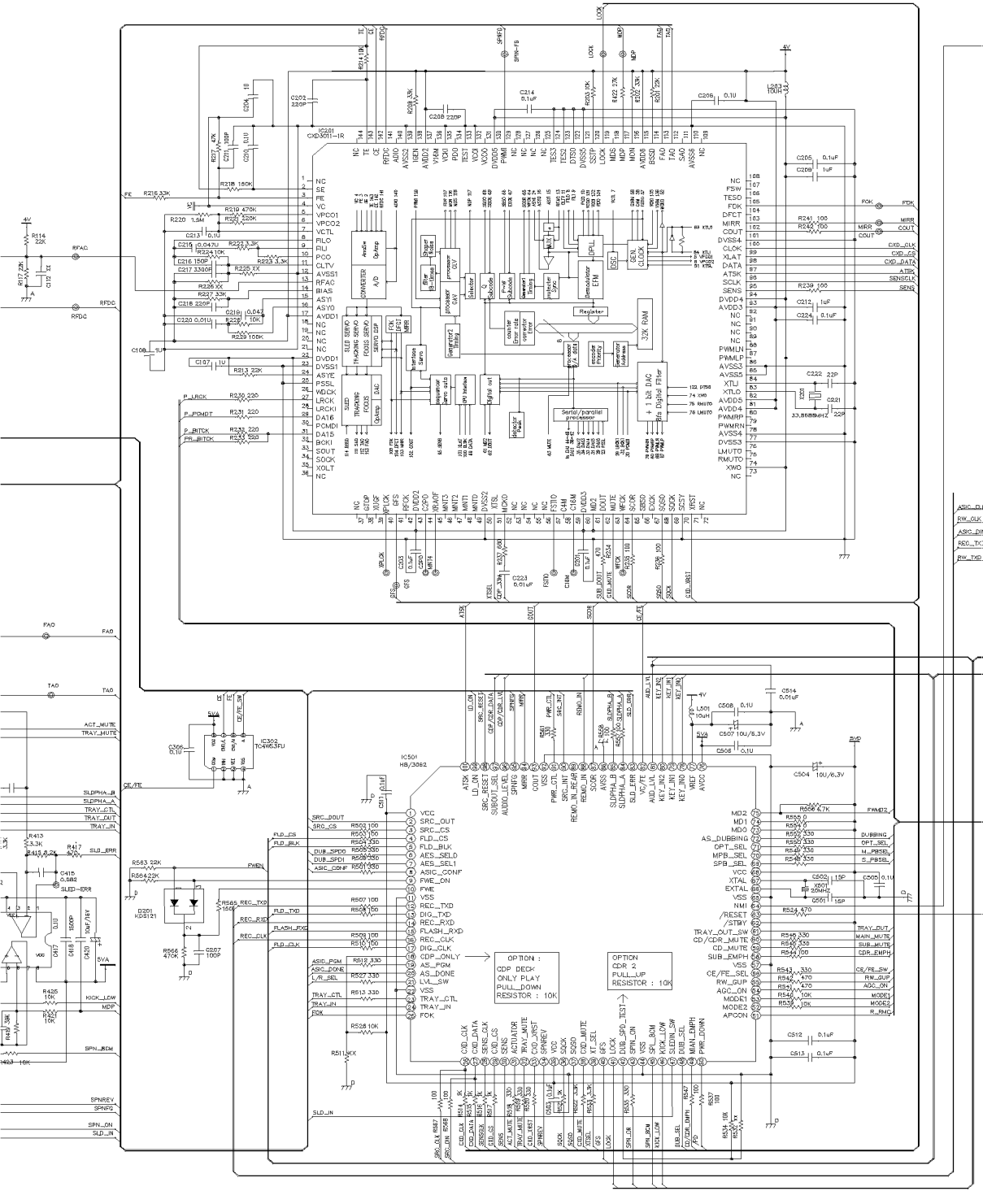
• CD RECORD SECTION



REF.NO.	PART NO	DESCRIPTION
5	4861R-0005A	CLAMP ASSY ACDR E2(4861H-0008A)
7	3390R-0007A	TRAY DISC(E2, 3390H-1011C)
8	4400R-0007A	BELT ACDR E2(4400H-1003A)
9	4560R-0009A	PULLEY GEAR(E2, 4560H-1004A)
10	4681R-1022A	MOTOR ASSY LOADING(E2, 4681H-1024A)
11	4470R-0059A	GEAR LOADING(E2, 4470H-1015A)
12	4470R-0060A	GEAR MIDDLE(E2, 4470H-1016A)
14	3040R-0030A	BASE UP/DOWN(E2, 3040H-1059A)
15	3040R-0029A	BASE MAIN(E2, 3040H-1035B)
16	4974R-0028A	GUIDE UP/DOWN(E2, 4974H-1023A)
20	5040R-0048A	RUBBER FRONT(E2, 5040H-1055A)
21	5040R-0047A	RUBBER REAR(E2, 5040H-1054A)
22	4680R-E002A	MOTOR(MECH) FEEDING RF-300PA-11400 MABUCHI E2(4680HP4001A)
23	4470R-0065A	GEAR PINION(U, E2, 4470H-1123A)
24	4470R-0063A	GEAR RACK(B, E2, 4470H-1121A)
25	6716R-E001A	PICK UP KRS-200A SONY E2(6716HSW201A)
26	4370R-0033A	SHAFT P/U(R/E2, 4370H-1079A)
28	4930R-0194A	HOLDER FFC(E2, 4930H-1063A)
29	4370R-0032A	SHAFT P/U(L/E2, 4370H-1078A)
30	4810R-0076A	BRACKET WEIGHT BALANCER(E2, 4810H-1042A)
31	4680R-C001A	MOTOR(MECH) SPINDLE GRS-R01A LGC&D(E2, 4680HB 1025A)
400	1SZZR-0022A	SCREW D1.7 5MM SWRCH16A/NIY(E2, 1SZZH-1005A)
402	1SZZR-0020A	SCREW D2. 0 4.5MM SWRCH16A/ZNY(E2, 1SZZH-1020C)
418	1SZZR-0014A	SCREW D1. 7 7MM SWRCH16A/ZNY(E2, 1SZZH-1006A)
420	1SZZR-0016A	SCREW D1. 7 4MM SWRCH16A/ZNBK(E2, 4000H-1006A)
431	1SZZR-0013A	SCREW D1. 7 5MM SWRCH16A/ZNY(E2, 1SZZH-1004A)
500	1WZZR-0008A	WASHER BLACK Y POLY N(E2, 1WZZH-1009A)

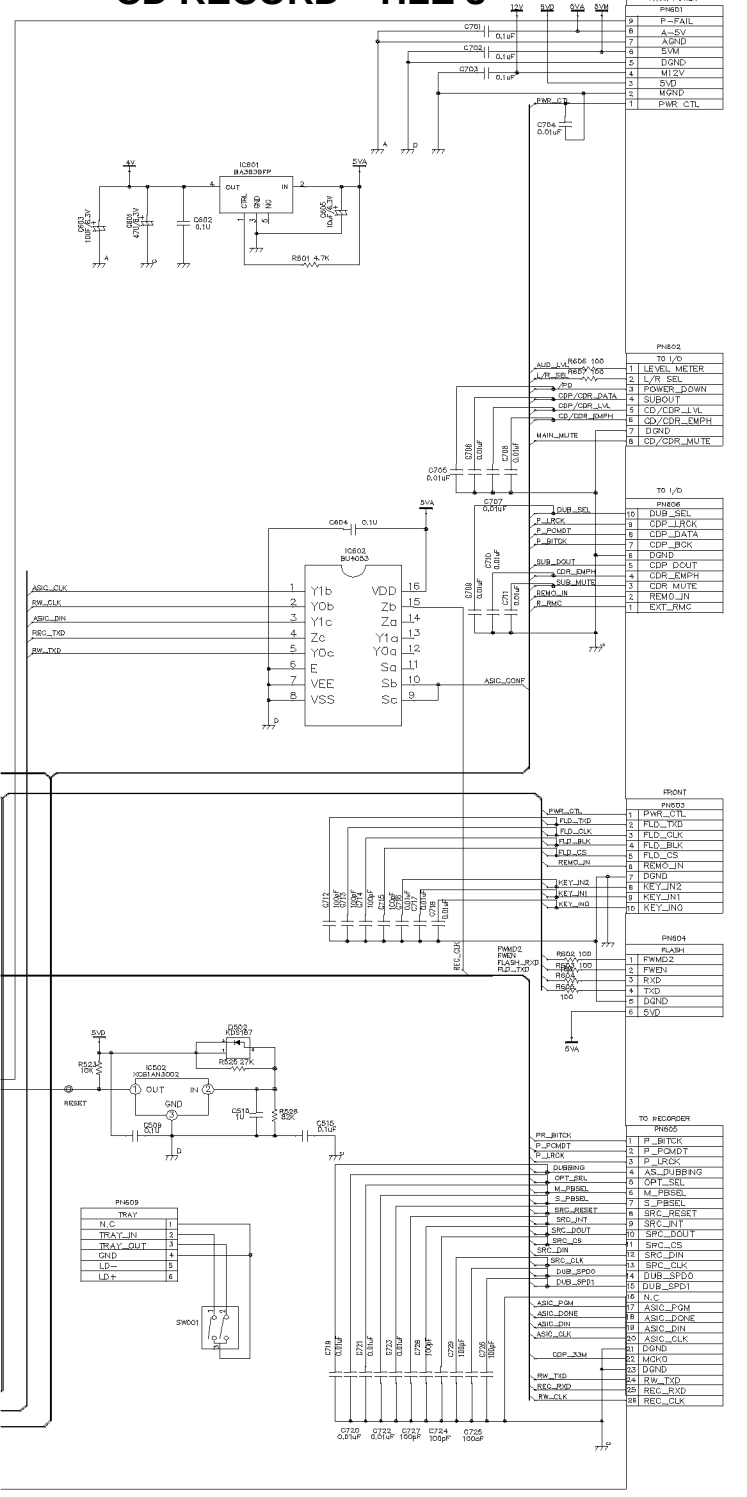
CD RECORD TILE 1



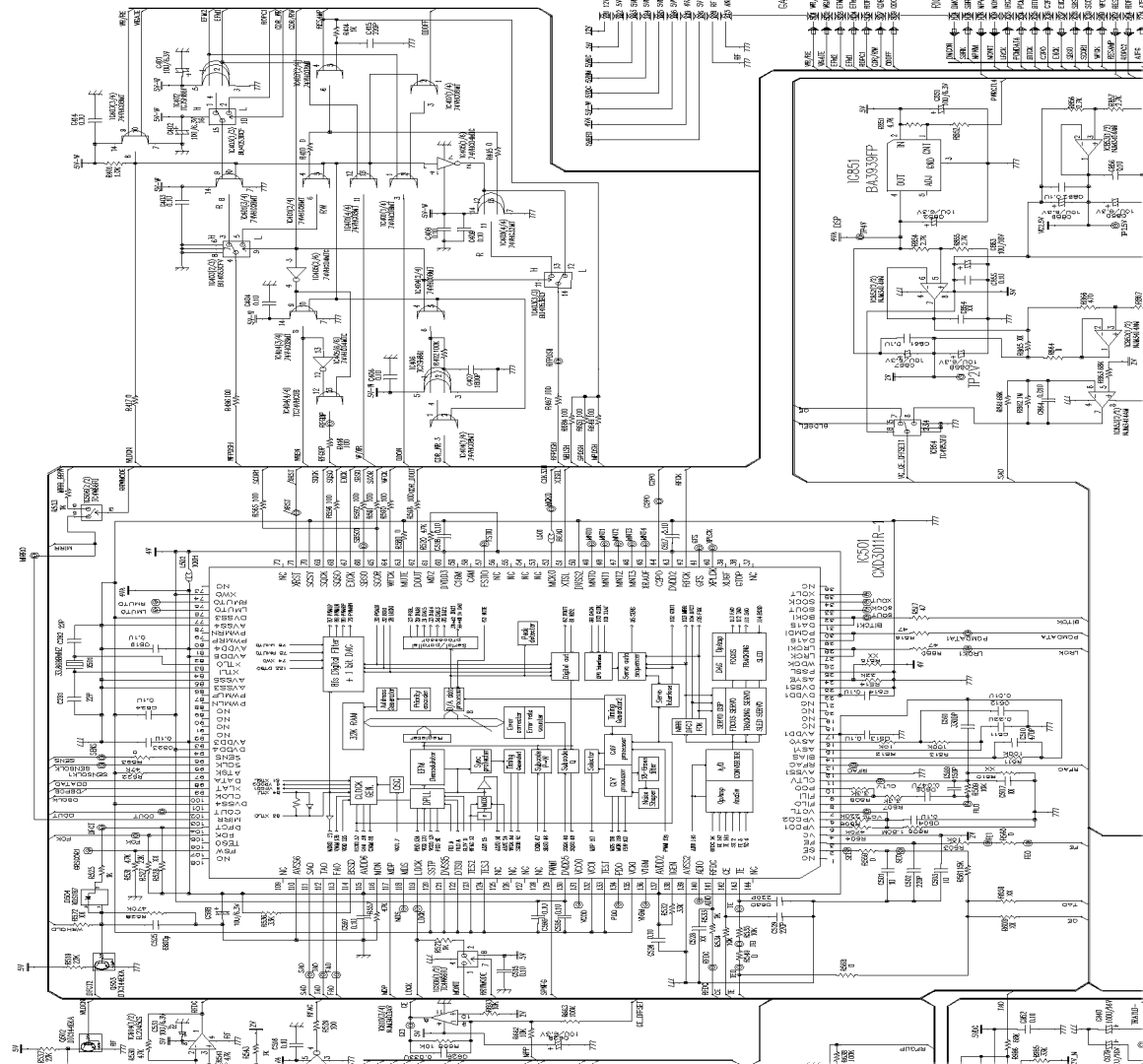


CD RECORD - TILE 2

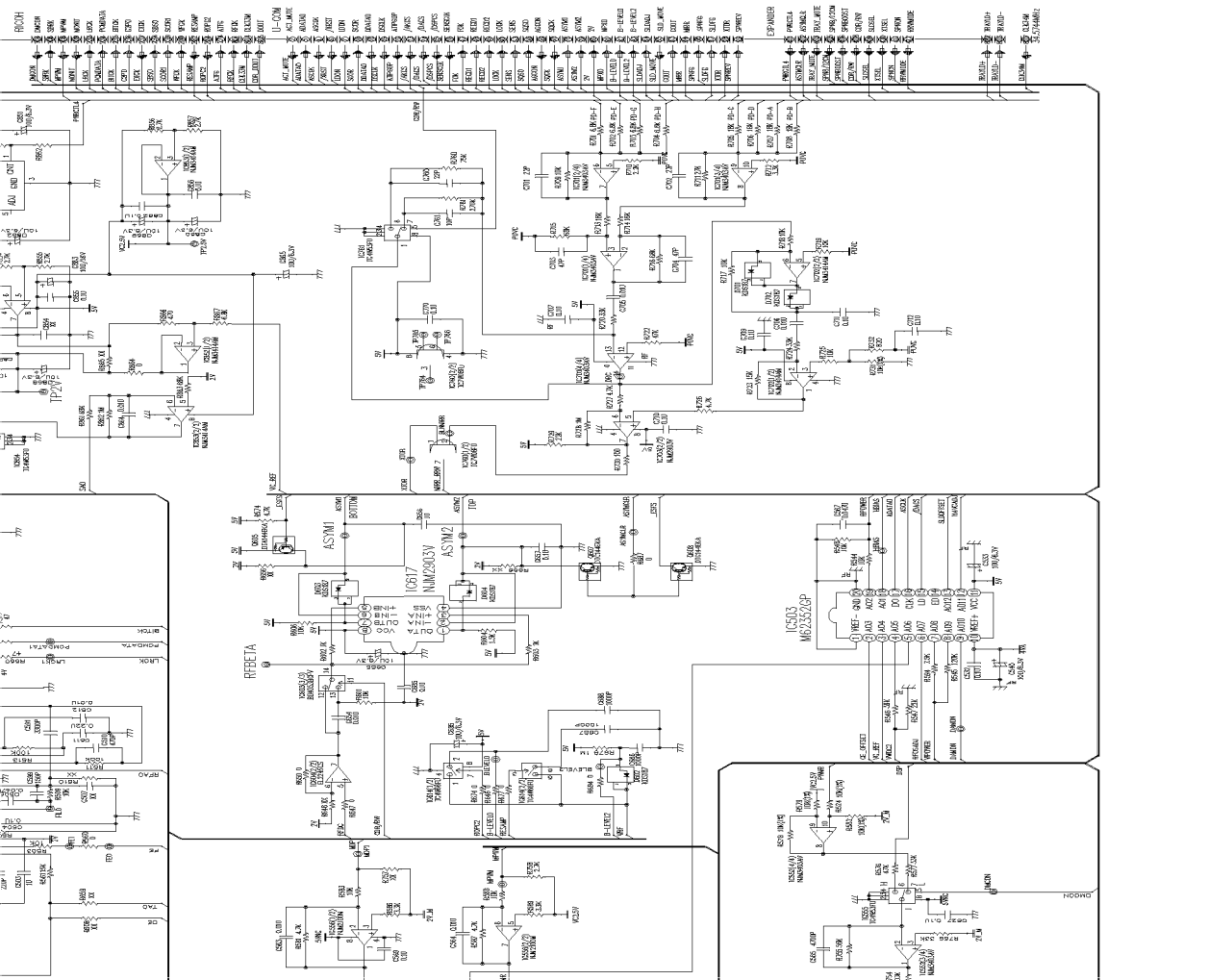
CD RECORD - TILE 3

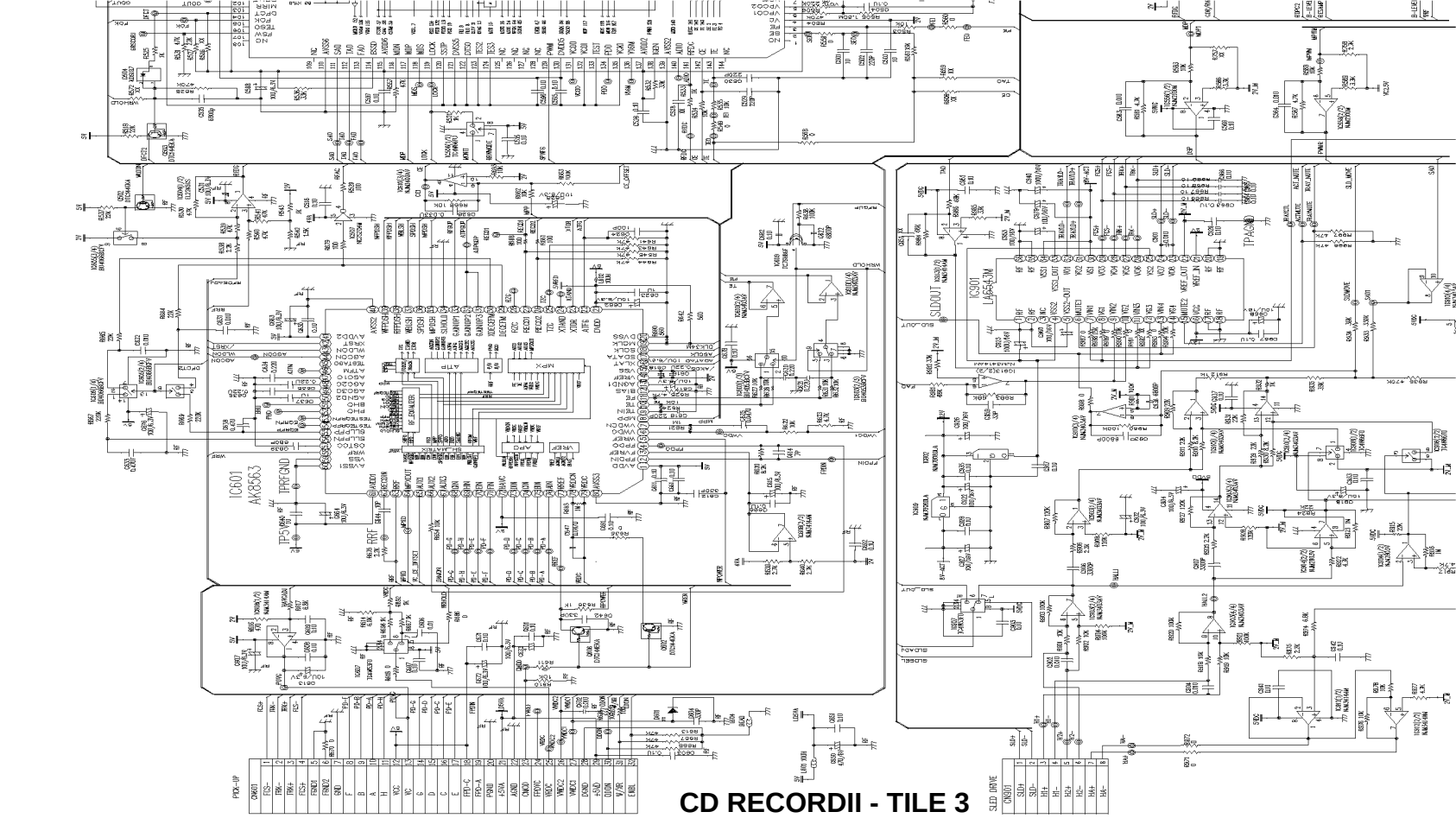


- **CD RECORDII - TILE 1**

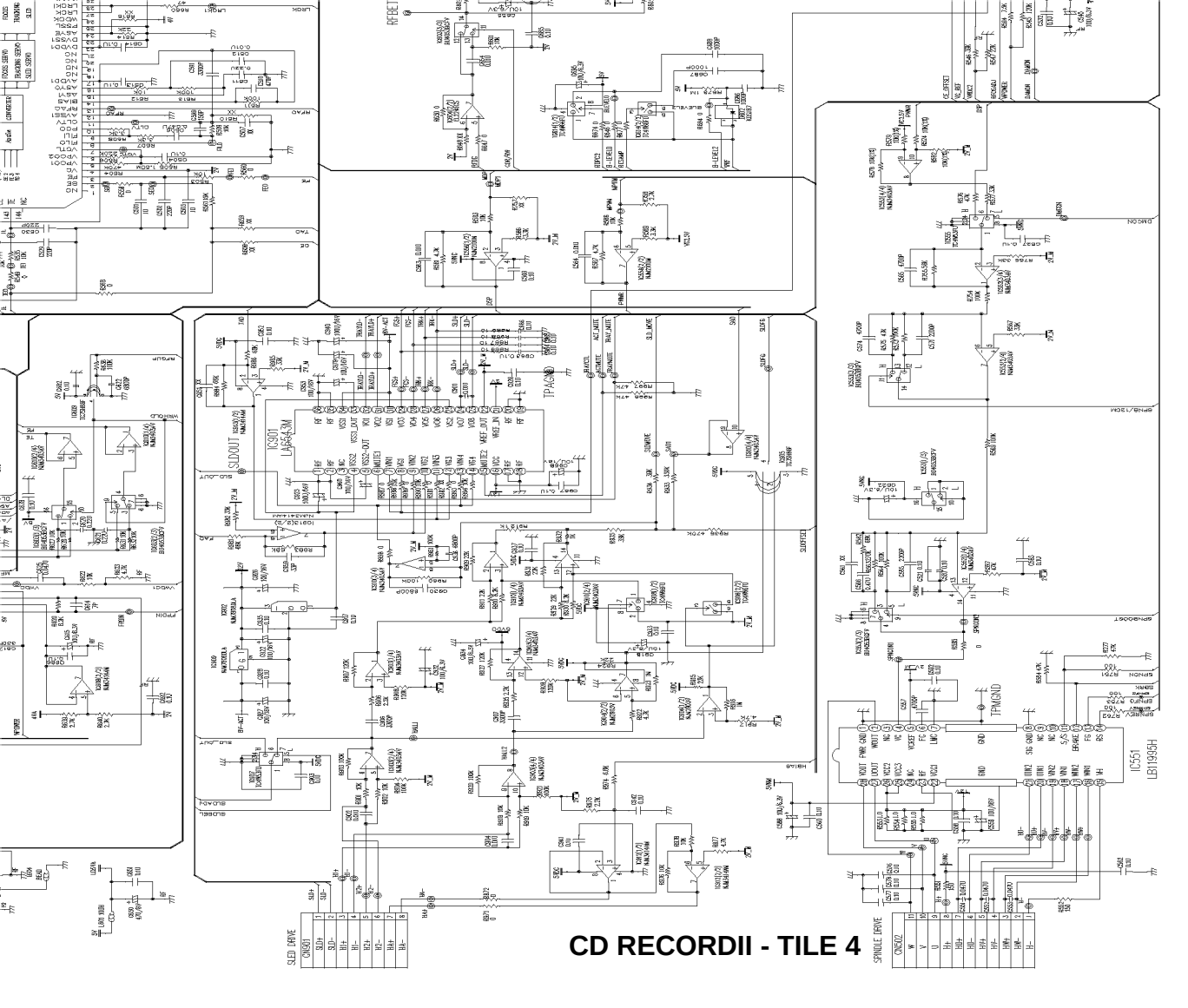


CD RECORDII - TILE 2



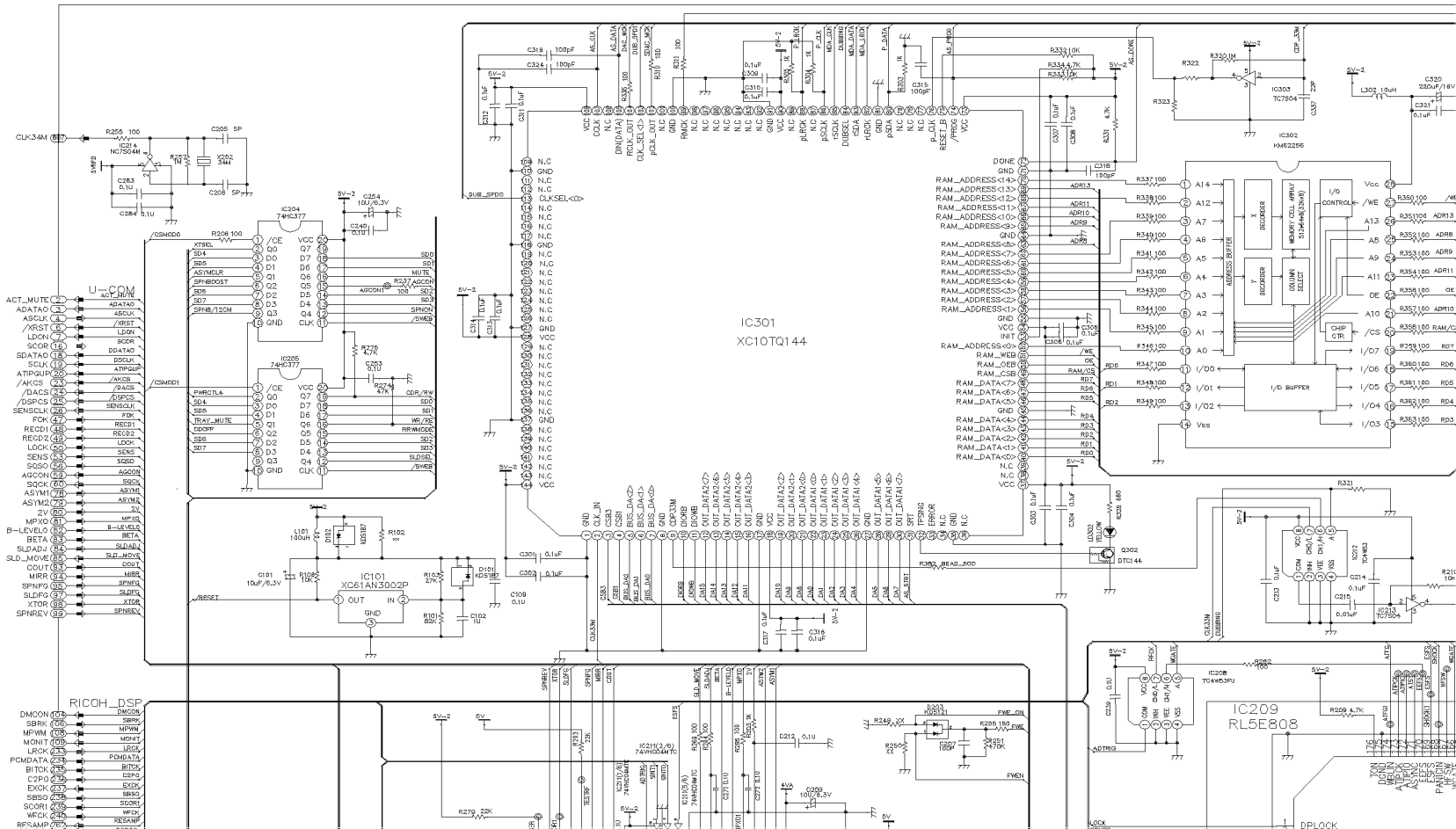


CD RECORDII - TILE 3

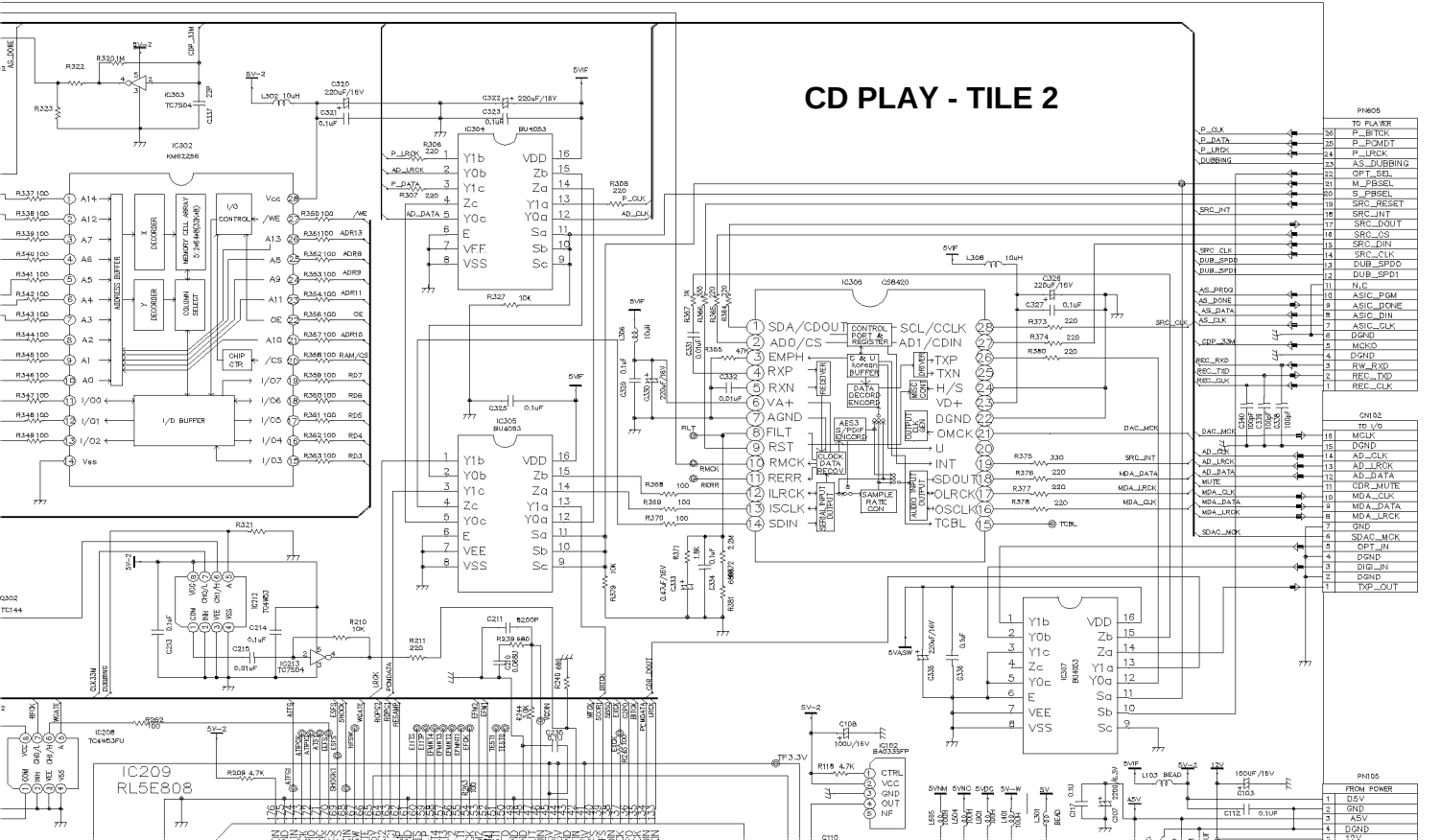


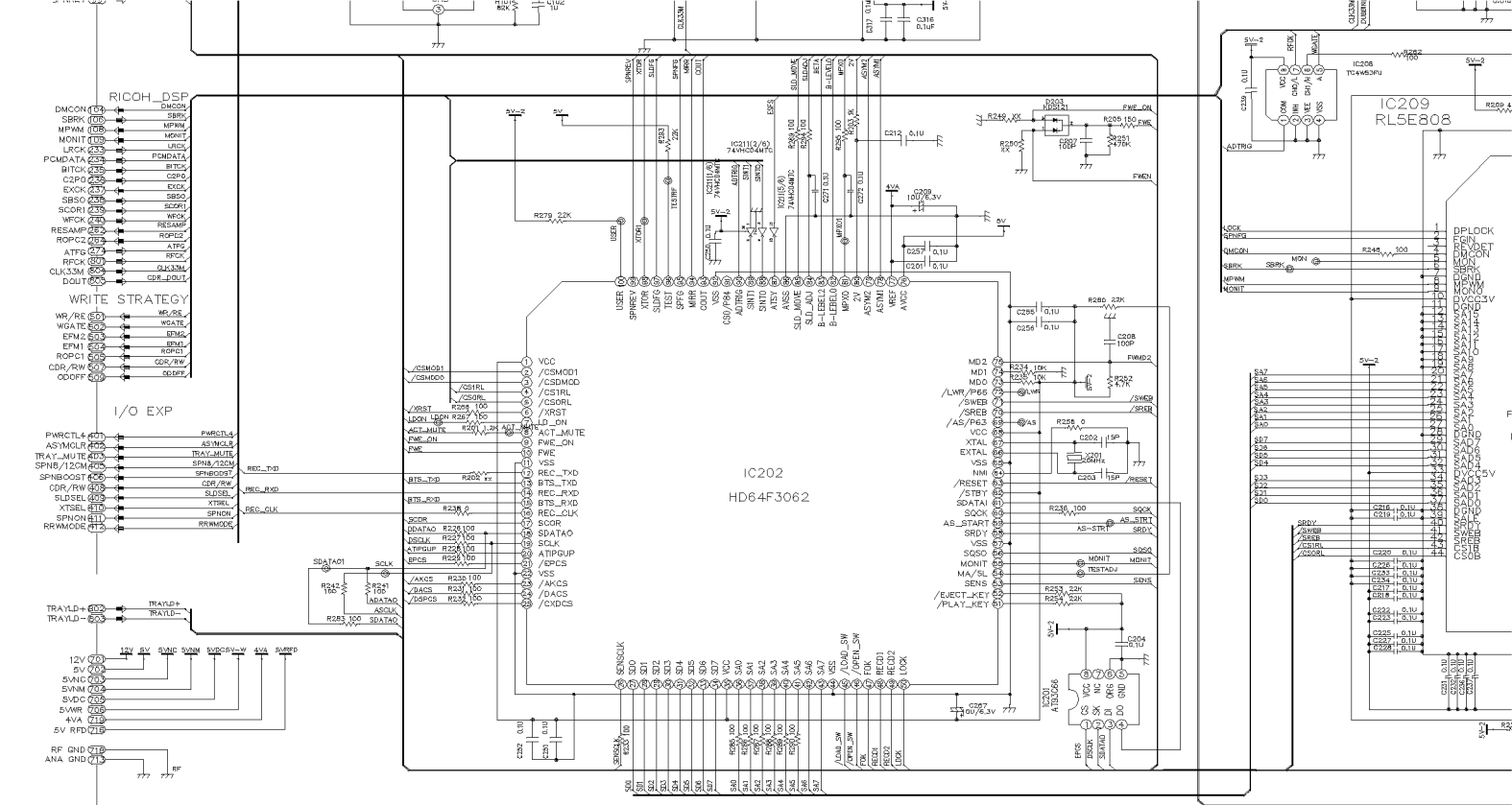
CD RECORDII - TILE 4

CD PLAY - TILE 1

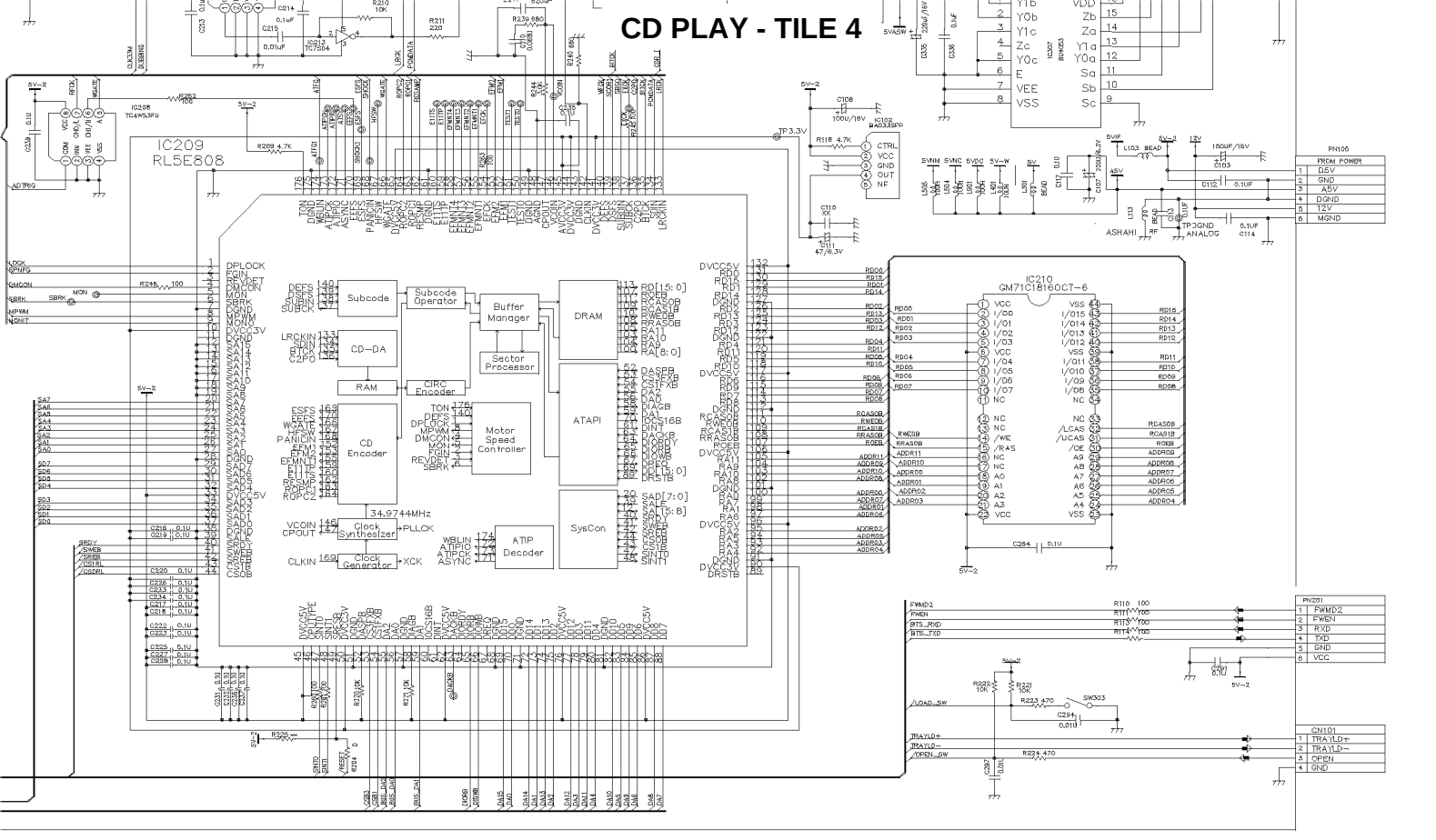


CD PLAY - TILE 2

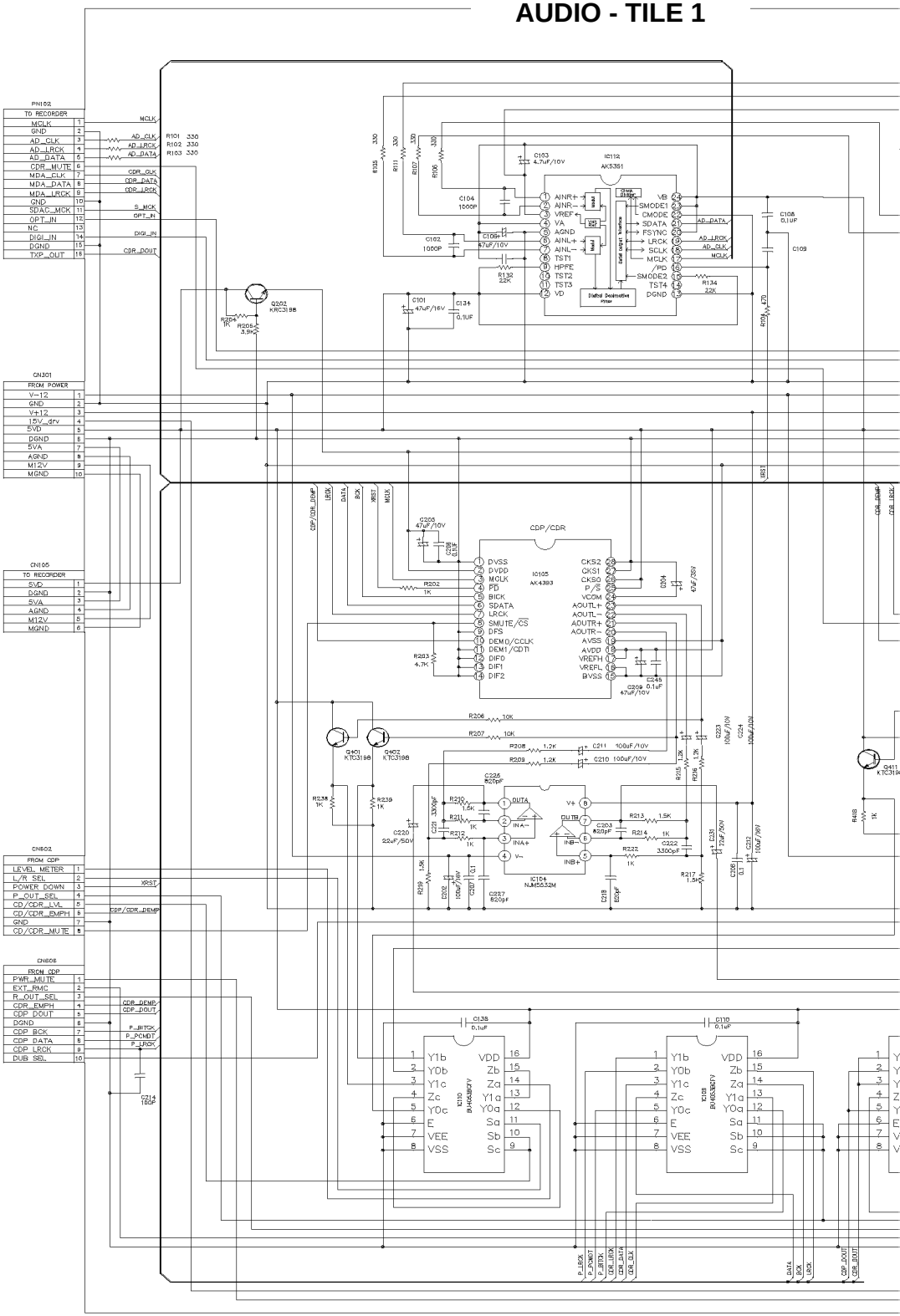



RICOH_DSP
WRITE STRATEGY
I/O EXP
IC202
HD64F3062
IC209
RL5E808
IC206
TC4W53FU
IC201
AT93C66
CD PLAY - TILE 3

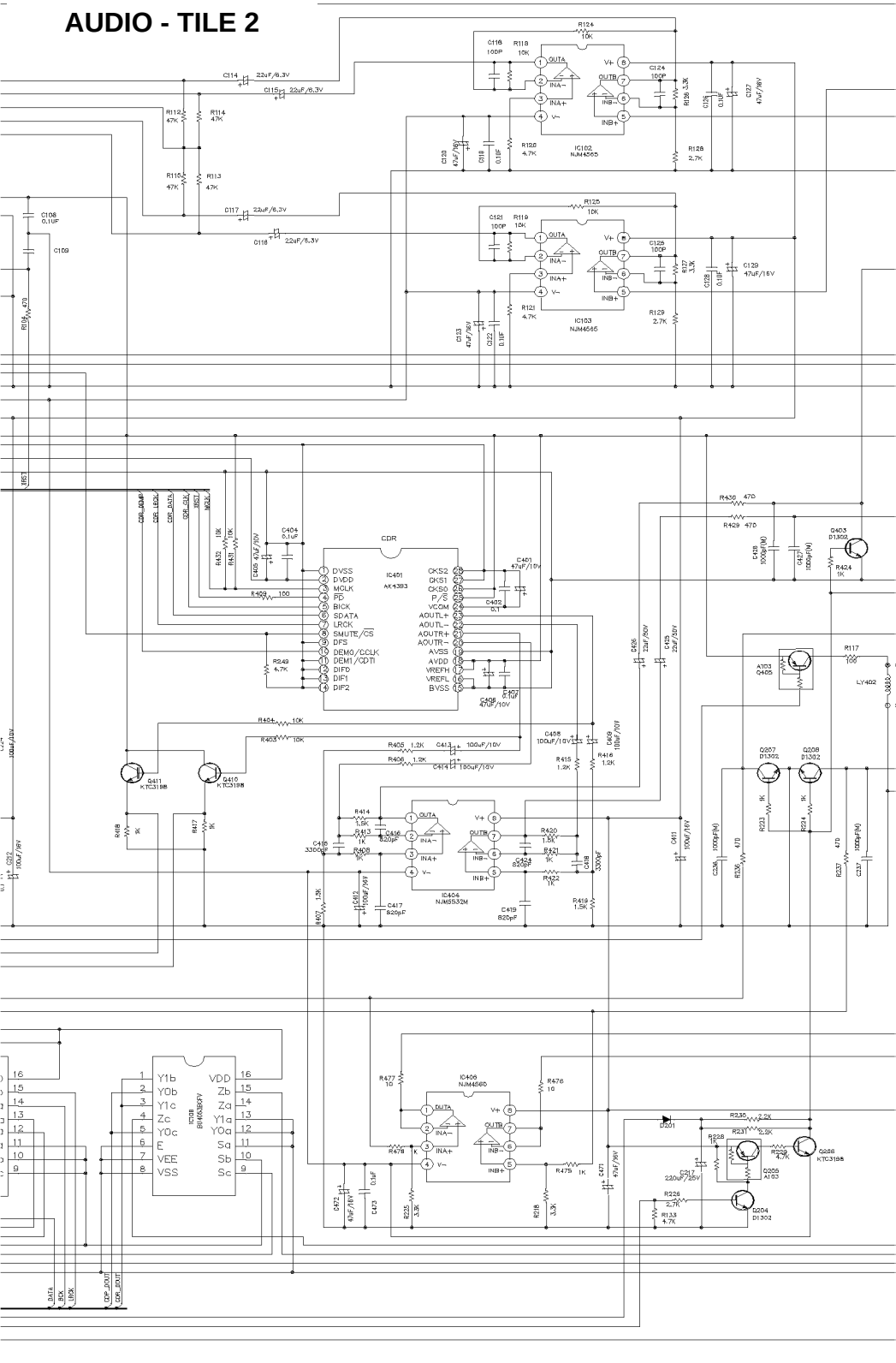
CD PLAY - TILE 4



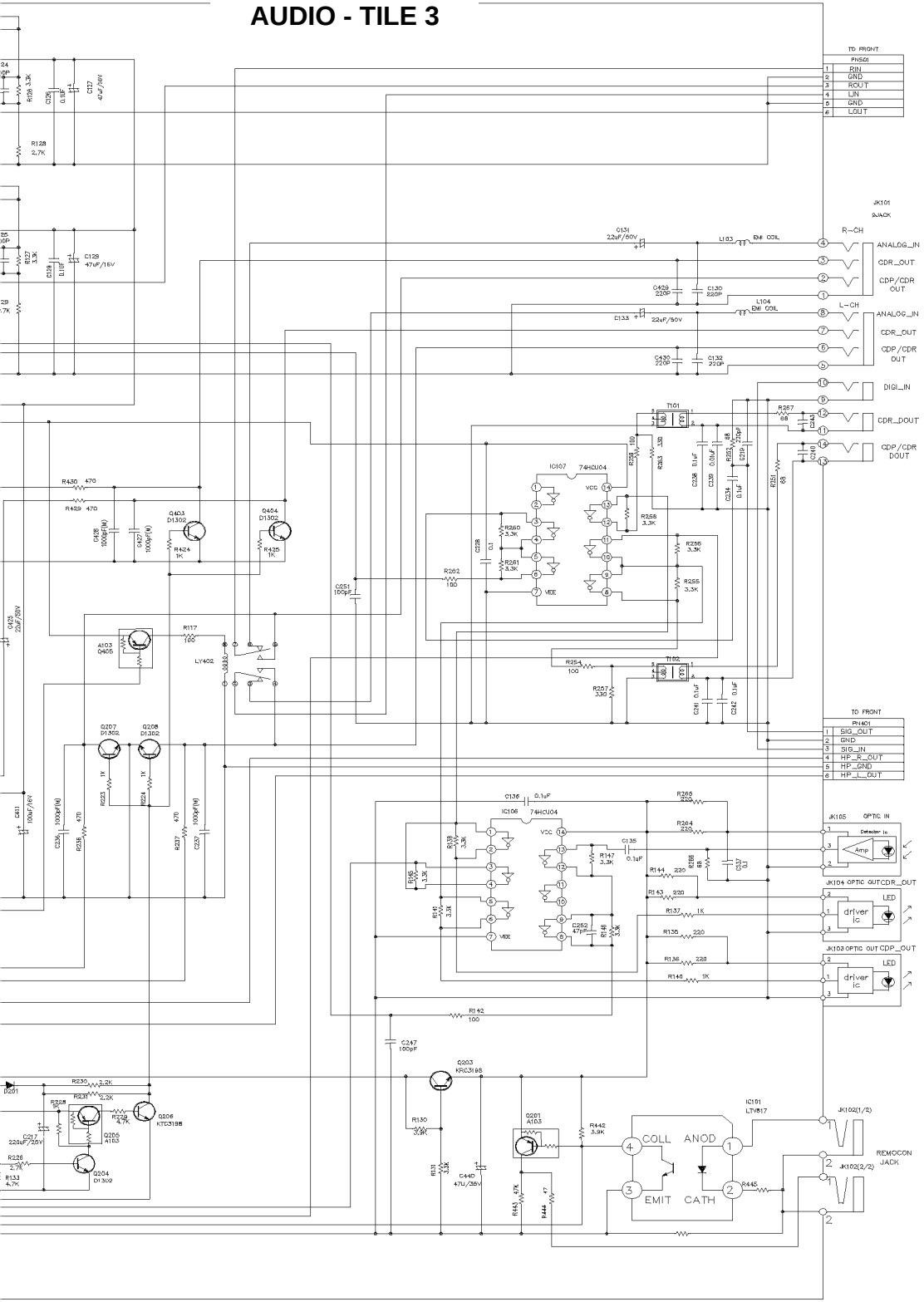
AUDIO - TILE 1


CN102
TO RECORDER
MCLK
GND
AD_CLK
AD_LRCK
AD_DATA
CDR_MUTE
MDA_CLK
MDA_DATA
MDA_LRCK
SDAC_MCK
OPT_IN
NC
DIGI_IN
DGND
TXP_OUT
CDR_CLK
CDR_DATA
CDR_LRCK
S_MCK
CDR_DOUT
R101 330
R102 330
R103 330
CN301
FROM POWER
V-12
GND
V+12
15V_drv
5VD
DGND
5VA
AGND
M12V
MGND
CN105
TO RECORDER
5VD
DGND
5VA
AGND
M12V
MGND
CN602
FROM CDP
LEVEL METER
L/R SEL
POWER DOWN
P_OUT_SEL
CD/CDR_LVL
CD/CDR_EMPH
GND
CD/CDR_MUTE
XRST
CDP/CDR_DEMP
CN606
FROM CDP
PWR_MUTE
EXT_RMC
R_OUT_SEL
CDR_EMPH
CDP_DOUT
DGND
CDP_BCK
CDP_DATA
CDP_LRCK
DUB_SEL
CDR_DEMP
CDP_DOUT
P_BITCK
P_PCMDT
P_LRCK
C214 180P
IC112 AK5351
AINR+
AINR-
VREF+
VA
AGND
AINL+
AINL-
TST1
HPFE
TST2
TST3
VD
SMODE1
CMODE
SDATA
FSYNC
LRCK
SCLK
MCLK
/PD
SMODE2
TST4
DGND
VB
AD_DATA
AD_LRCK
AD_CLK
MCLK
C103 4.7uF/10V
C104 1000P
C102 1000P
C105 47uF/10V
C101 47uF/16V
C134 0.1uF
C108 0.1uF
C109
R130 22K
R134 22K
R209 470
Q202 KRC319B
R204 1K
R205 3.9K
CDP/CDR
IC105 AK4393
DVSS
DVDD
MCLK
PD
BICK
SDATA
LRCK
SMUTE/CS
DFS
DEM0/CCLK
DEM1/CDTI
DIF0
DIF1
DIF2
CKS2
CKS1
CKS0
P/S
VCOM
AOUTL+
AOUTL-
AOUTR+
AOUTR-
AVSS
AVDD
VREFH
VREFL
RVSS
C205 47uF/10V
C208 0.1uF
C204 47uF/16V
C245
C209 0.1uF 47uF/10V
R202 1K
R203 4.7K
R206 10K
R207 10K
R208 1.2K
R209 1.2K
C211 100uF/10V
C210 100uF/10V
Q401 KTC3198
Q402 KTC3198
R215 1.2K
R216 1.2K
C223 100uF/10V
C224 100uF/10V
Q411 KTC3198
R238 1K
R239 1K
R240 1K
C225 820pF
C220 22uF/50V
C221 3300pF
R210 1.5K
R211 1K
R212 1K
OUTA
INA-
INA+
V-
OUTB
INB-
INB+
V+
C203 820pF
R213 1.5K
R214 1K
C222 3300pF
R222 1K
C231 22uF/50V
C232 100uF/16V
C206 0.1
R217 1.5K
R219 1.5K
C202 100uF/16V
C201 0.1
C227 820pF
C218 820pF
IC104 NJM5532M
C138 0.1uF
C110 0.1uF
IC110 BH4563B07F
IC108 BH4563B07F
Y1b
Y0b
Y1c
Zc
Y0c
E
VEE
VSS
VDD
Zb
Za
Y1a
Y0a
Sa
Sb
Sc
P_LRCK
P_PCMDT
P_BITCK
CDR_LRCK
CDR_DATA
CDR_BCK
DATA
BCK
LRCK
CDP_DOUT
CDR_DOUT

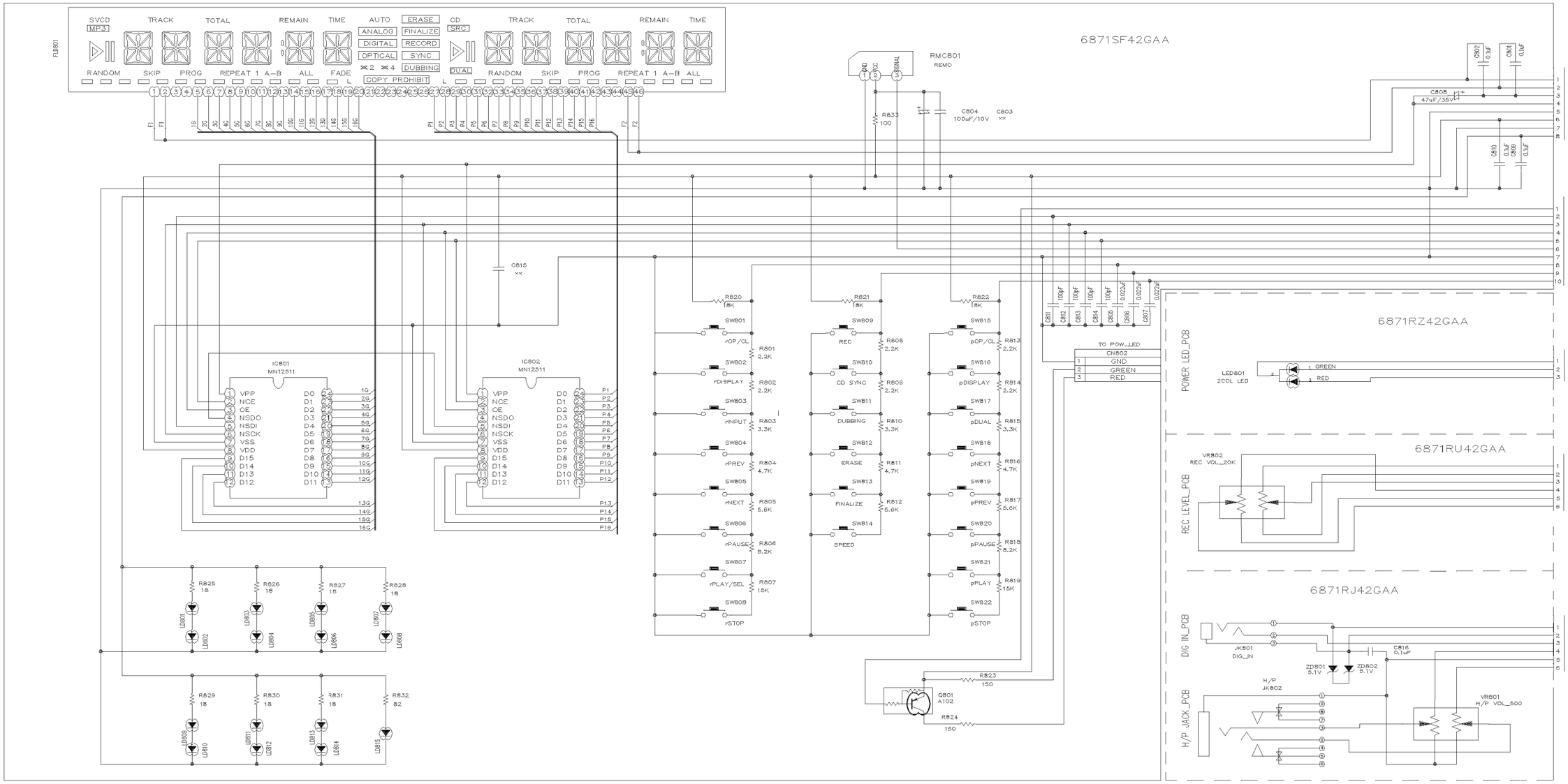
AUDIO - TILE 2


IC401
AK4393
CDR
DVSS
DVDD
MCLK
PD
BICK
SDATA
LRCK
SMUTE/CS
DFS
DEM0/CCLK
DEM1/CDTI
DIF0
DIF1
DIF2
CKS2
CKS1
CKS0
P/S
VCOM
AOUTL+
AOUTL−
AOUTR+
AOUTR−
AVSS
AVDD
VREFH
VREFL
IC102
NJM4565
IC103
NJM4565
IC404
NJM5532M
IC406
NJM4565
IC108
BH4053BKFV
Y1b
Y0b
Y1c
Zc
Y0c
E
VEE
VSS
VDD
Zb
Za
Y1a
Y0a
Sa
Sb
Sc

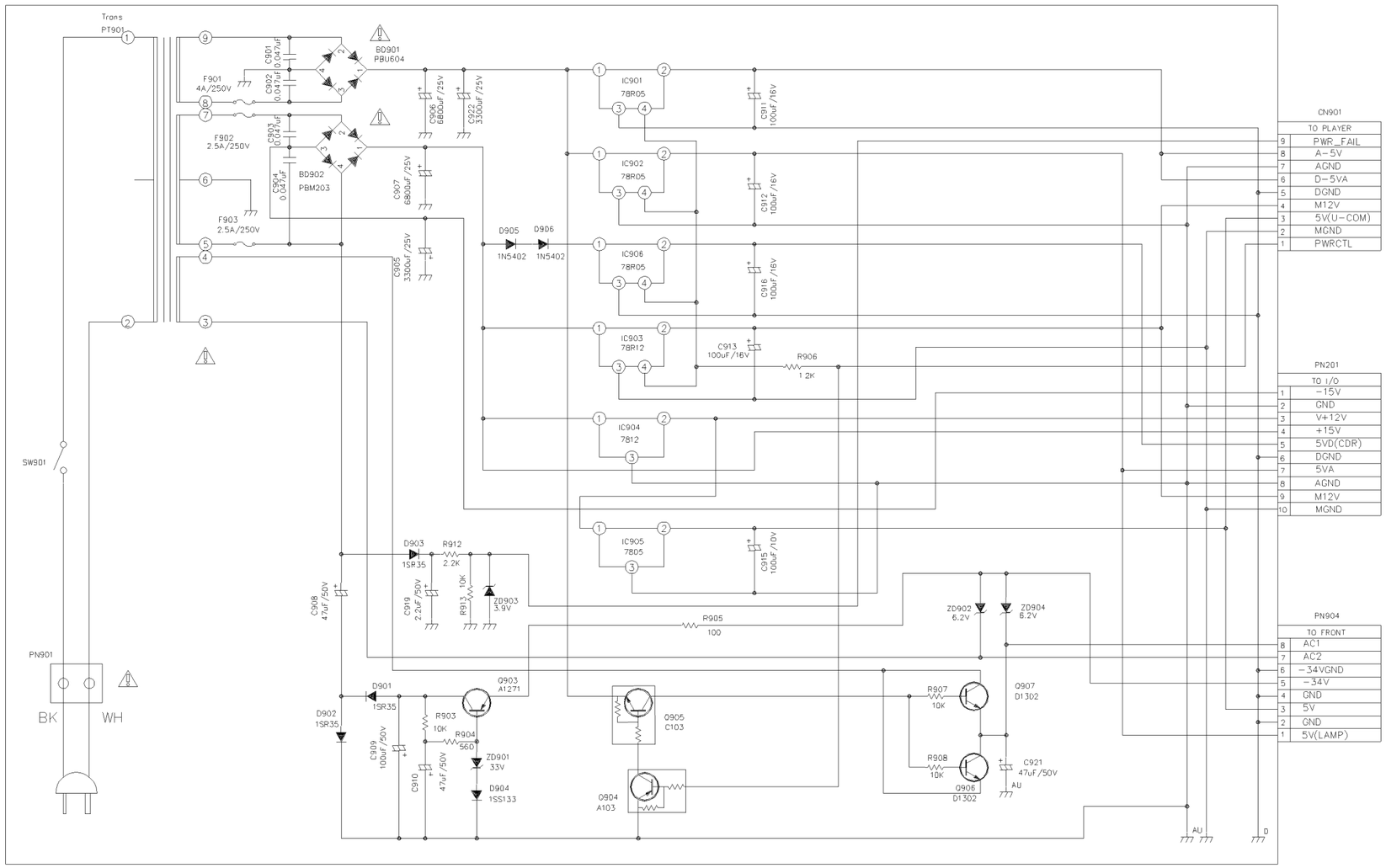
AUDIO - TILE 3


TO FRONT
PHSOI
1 RIN
2 GND
3 ROUT
4 LIN
5 GND
6 LOUT
JK101
9JACK
R-CH
L-CH
ANALOG_IN
CDR_OUT
CDP/CDR OUT
DIGI_IN
CDR_DOUT
T101
T102
IC107 74HCU04
IC106 74HCU04
TO FRONT
PH401
1 SIO_OUT
2 GND
3 SIG_IN
4 HP_R_OUT
5 HP_GND
6 HP_L_OUT
JK105 OPTIC IN
Detector IC
Amp
JK104 OPTIC OUT CDR_OUT
JK103 OPTIC OUT CDP_OUT
LED
driver ic
IC101 LTV817
COLL
ANOD
EMIT
CATH
JK102(1/2)
JK102(2/2)
REMOCON JACK
Q203 KRC5186
Q201 A103
Q205 KTC3198
Q206 A103
Q204 D1302
Q403 D1302
Q404 D1302
A103 Q405
LY402

FRONT SECTION

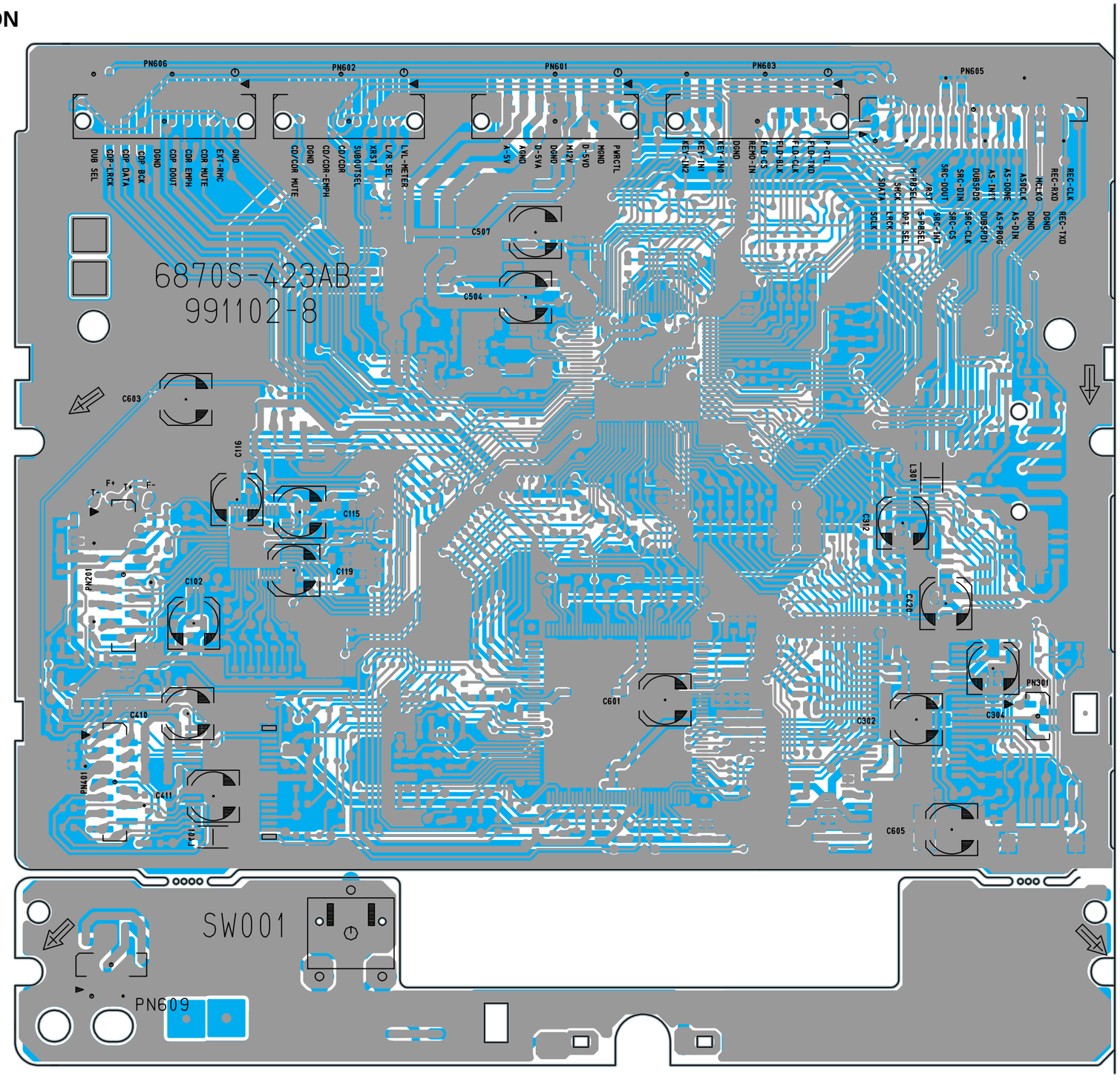


POWER SECTION

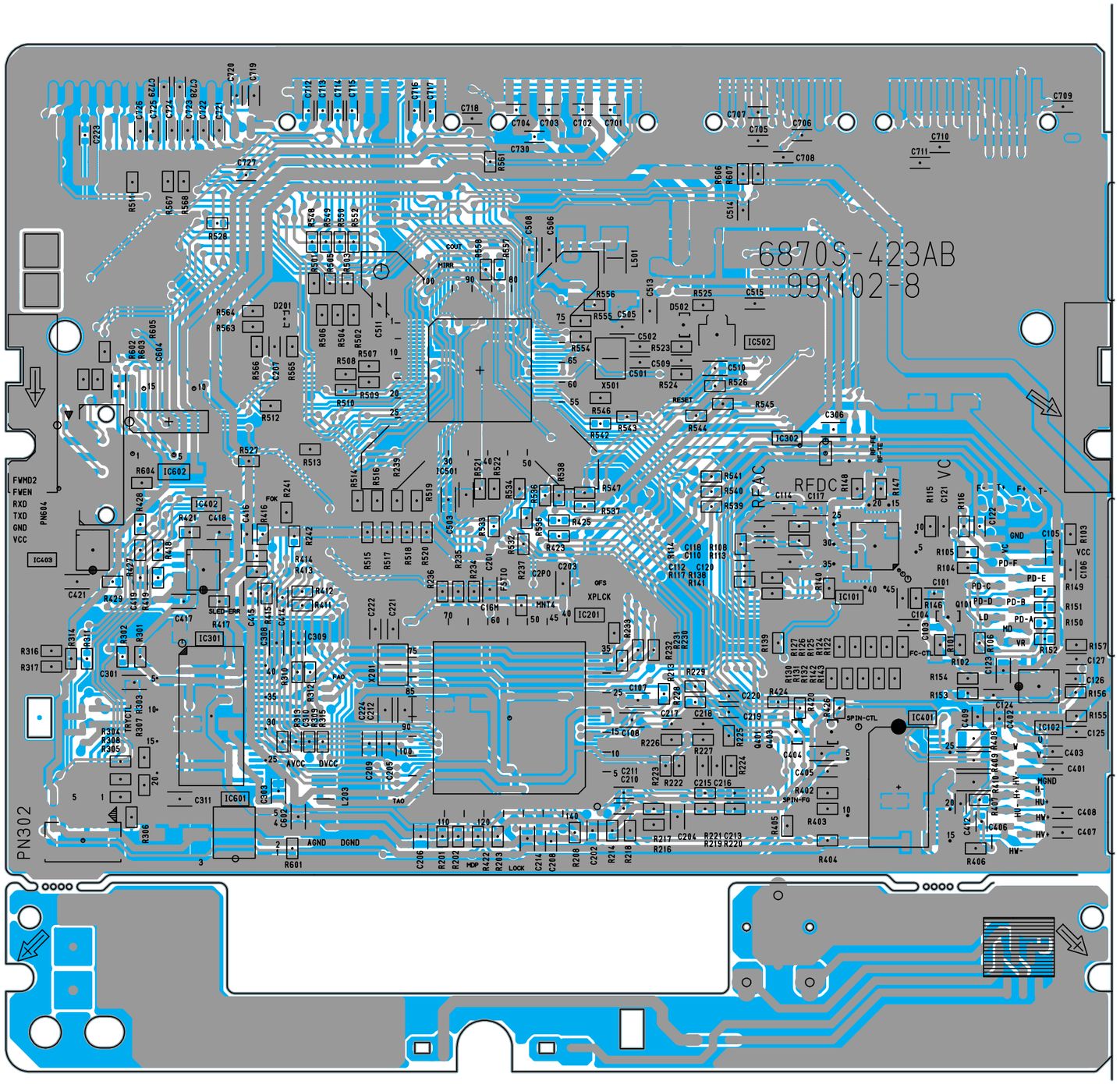


PCB LAYOUT

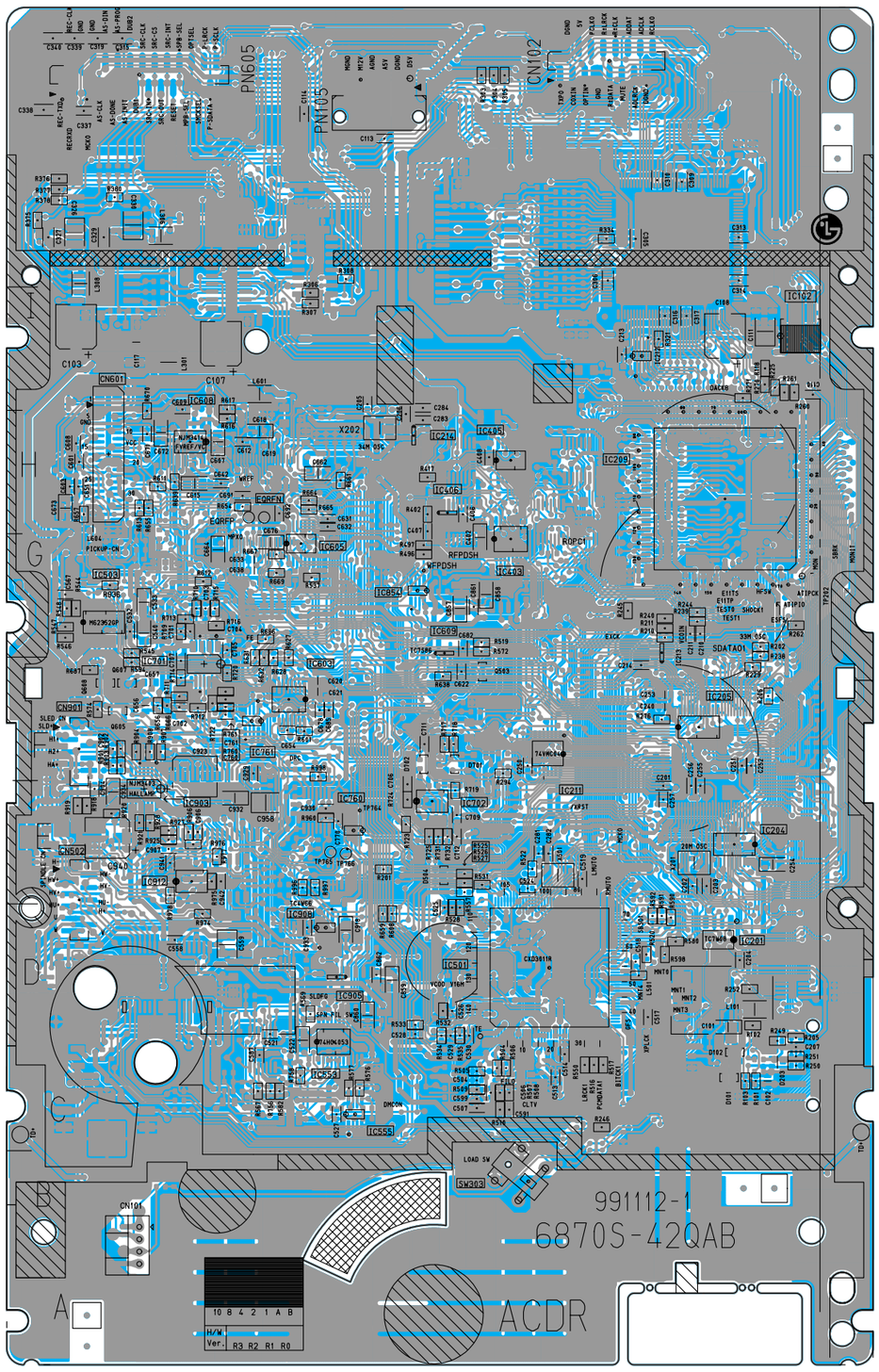
- **CD-PLAY TOP SECTION**



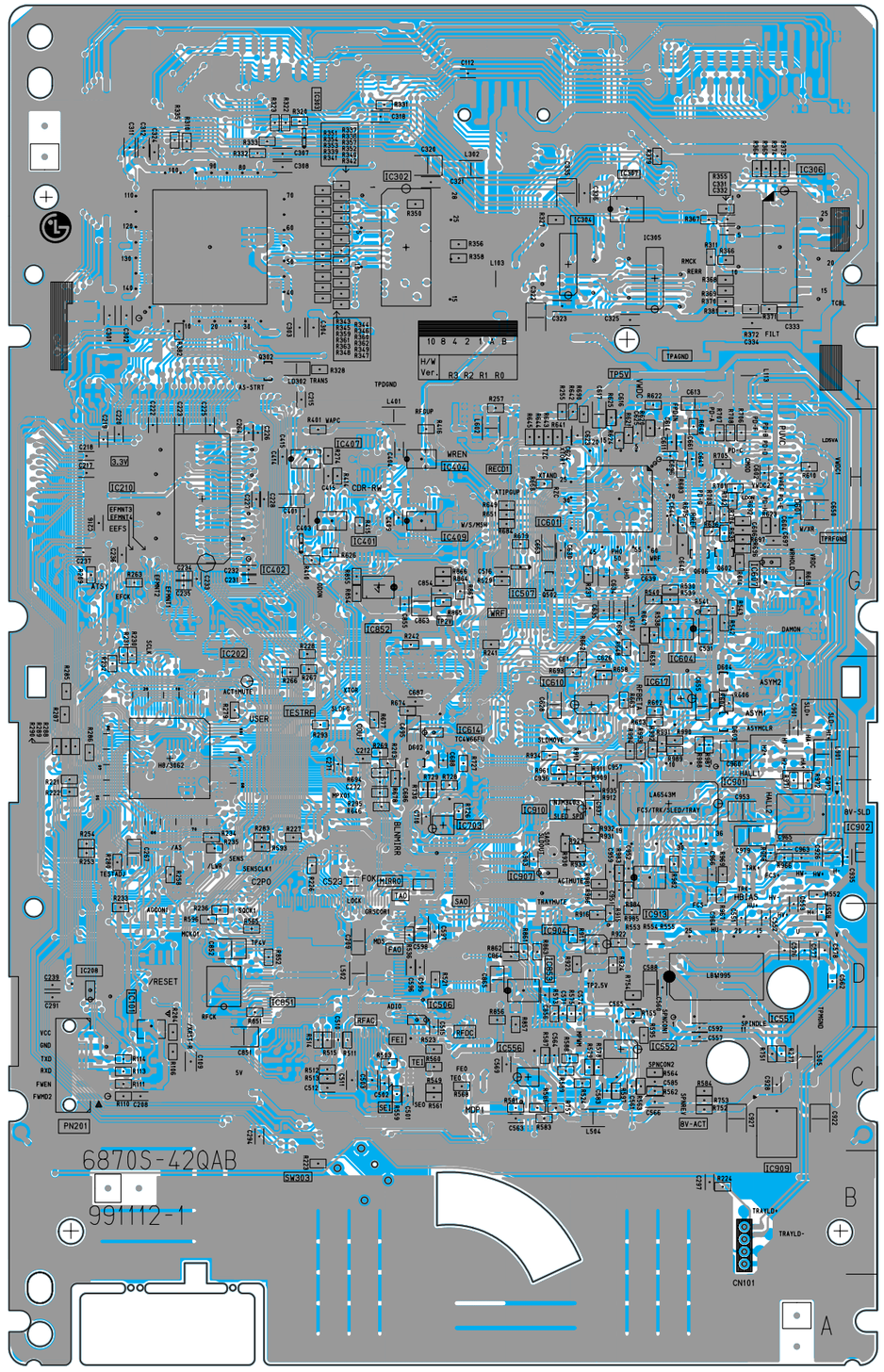
- **CD-PLAY BOTTOM SECTION**



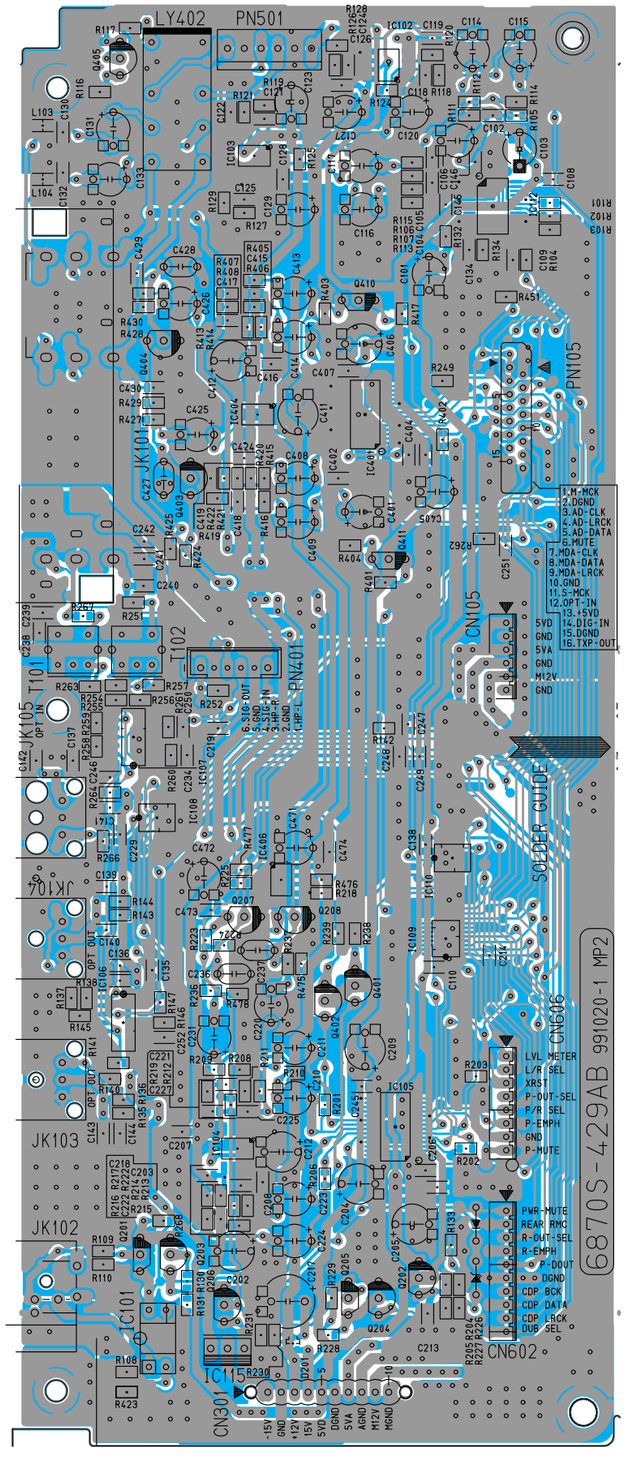
- **CD-RECORD TOP SECTION**



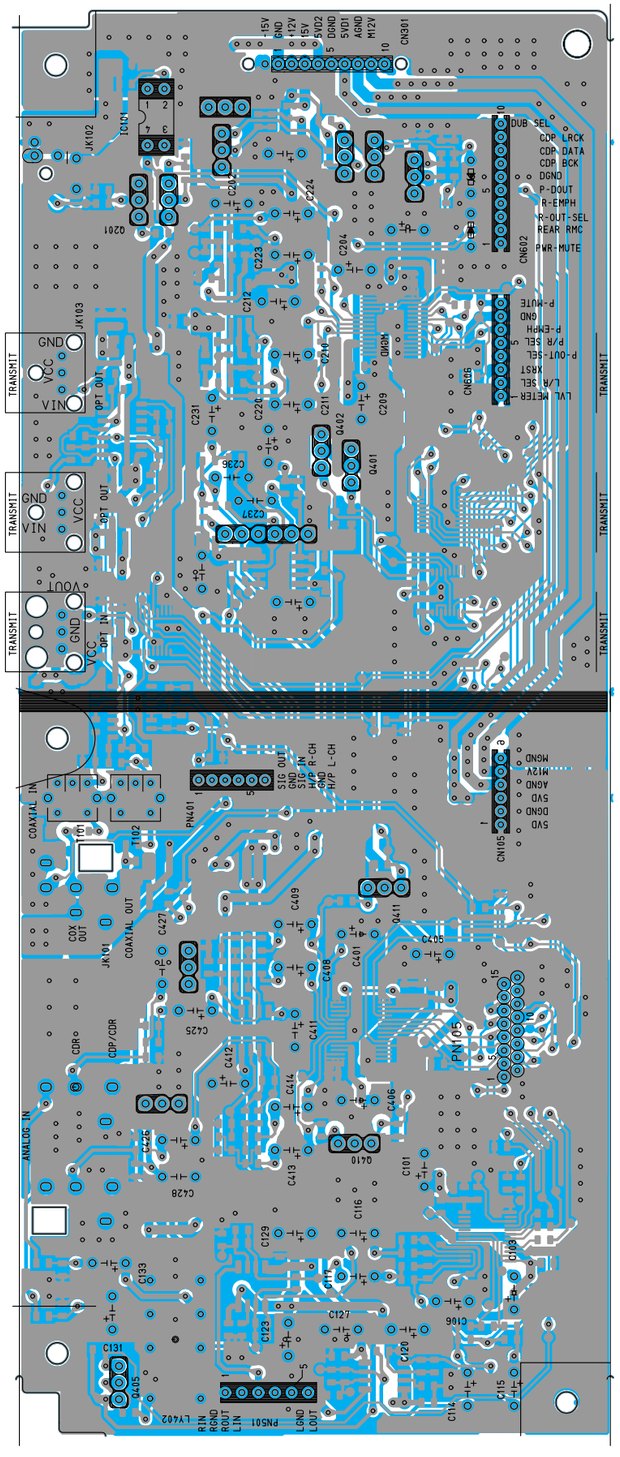
- **CD-RECORD BOTTOM SECTION**



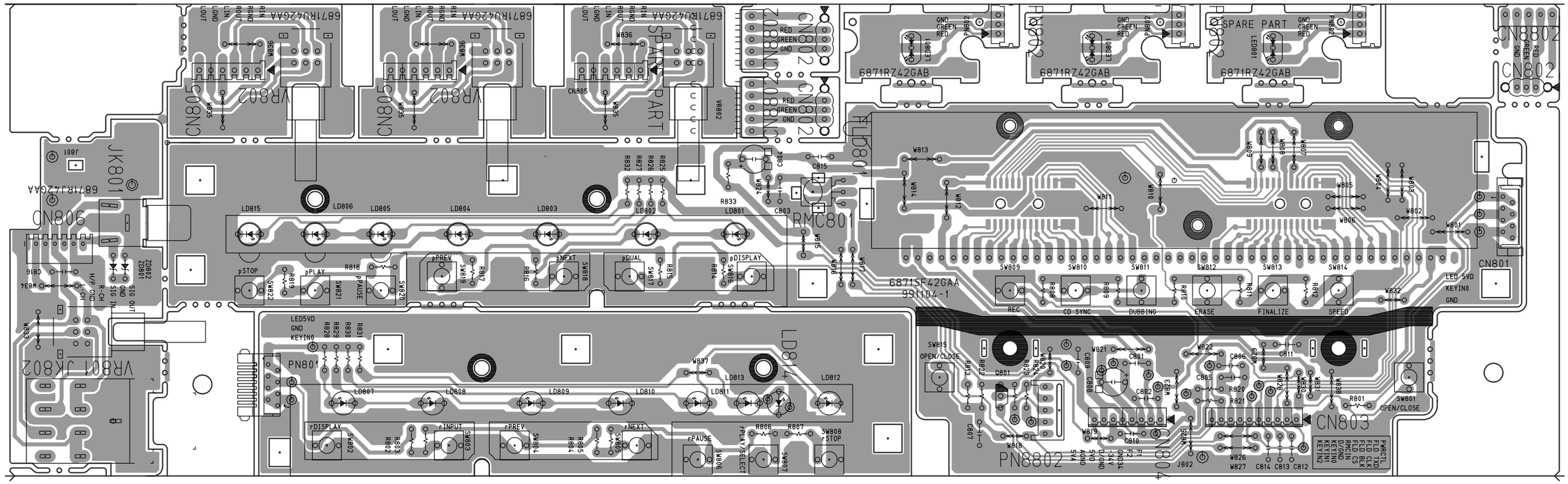
- **AUDIO TOP SECTION**



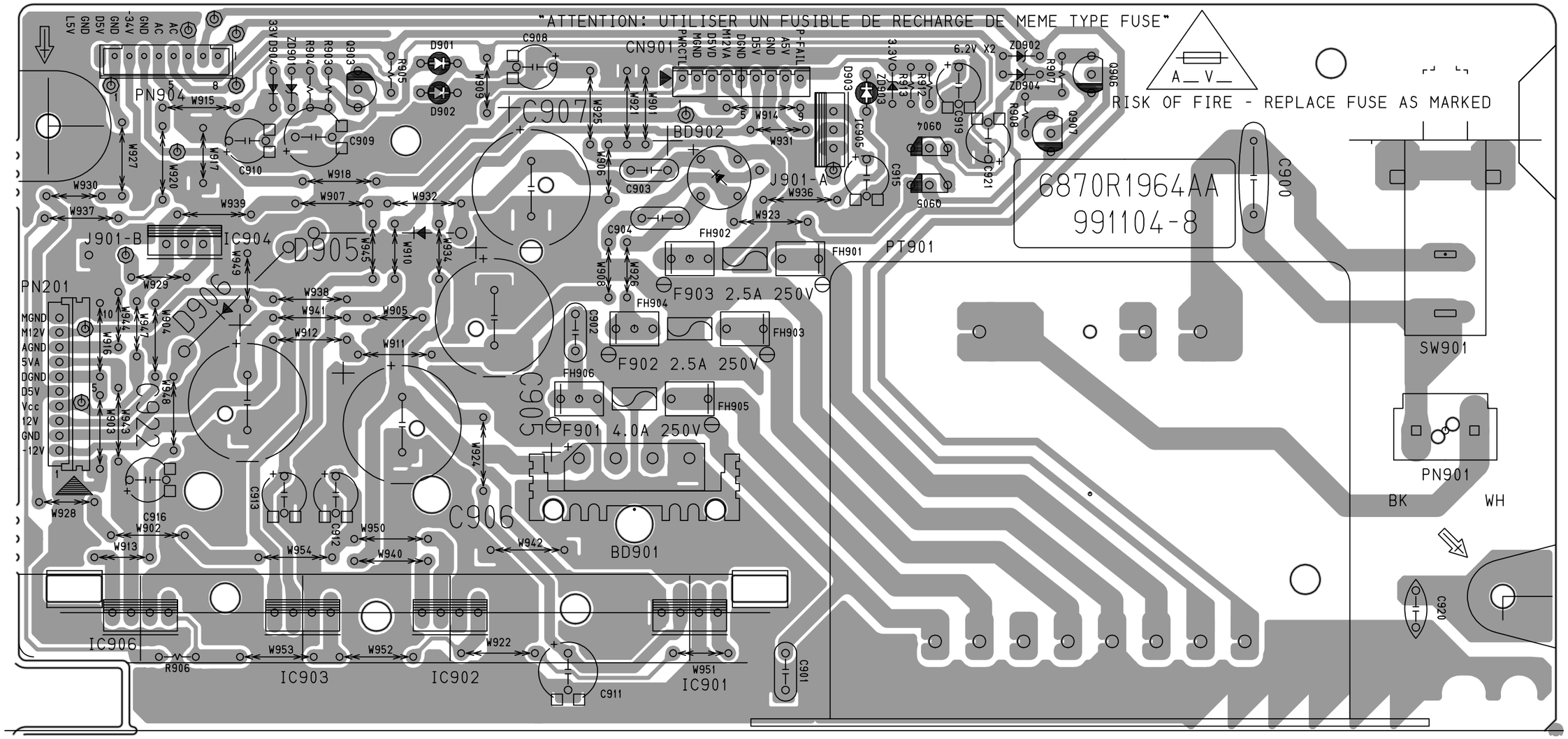
- **AUDIO BOTTOM SECTION**



- **FRONT SECTION**

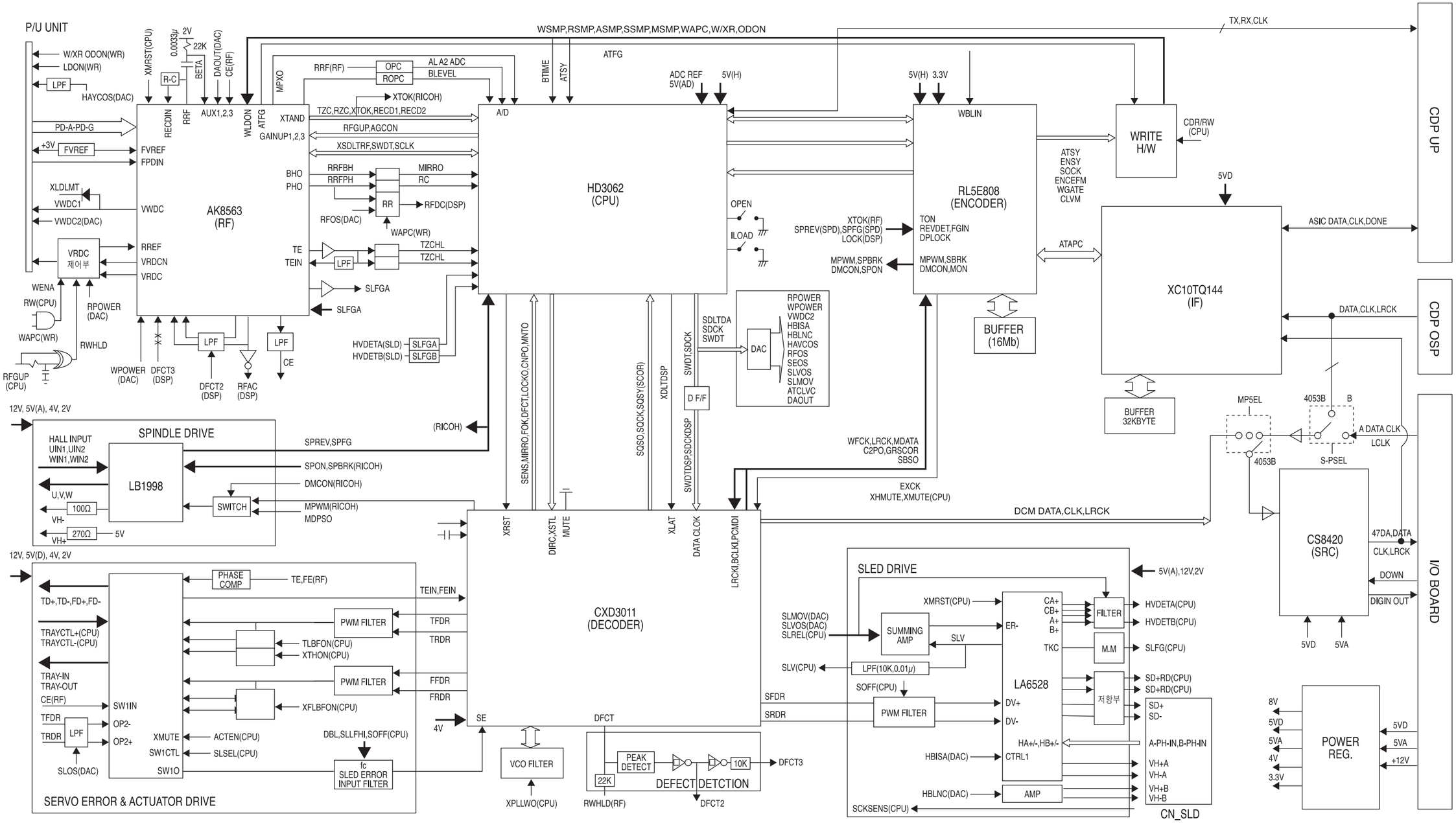


- **POWER SECTION**

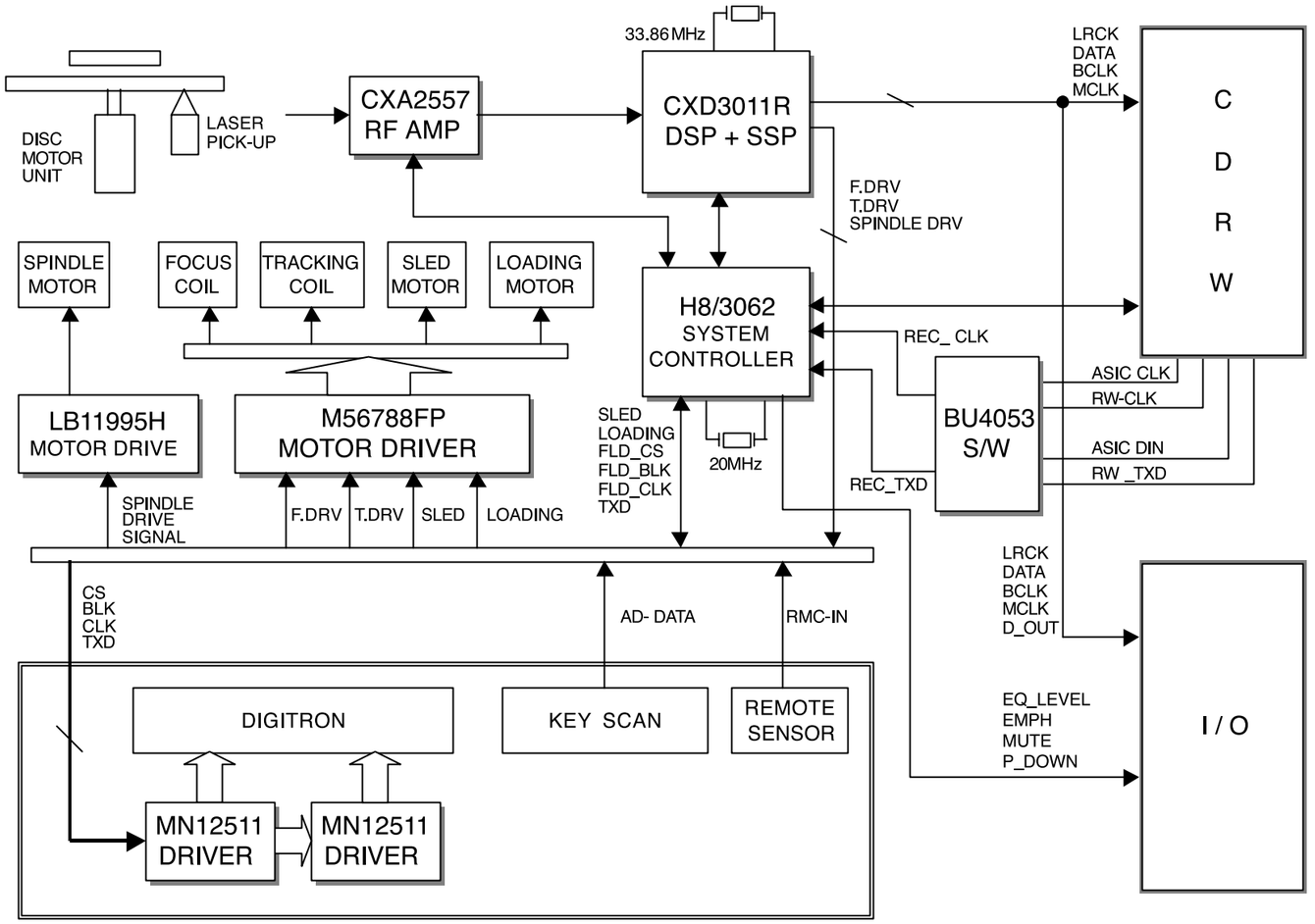


BLOCK DIAGRAM

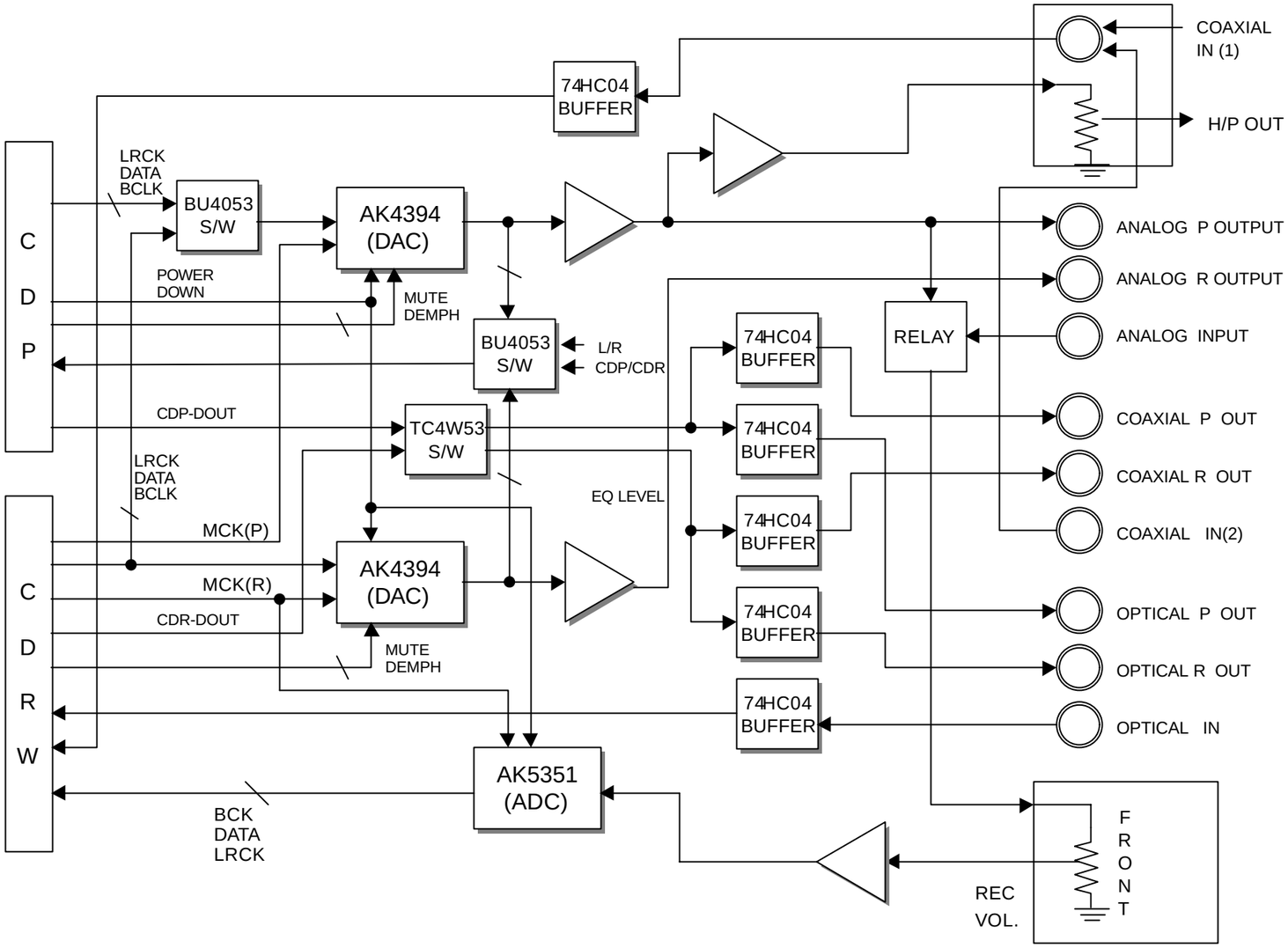
• CD RECORD SECTION



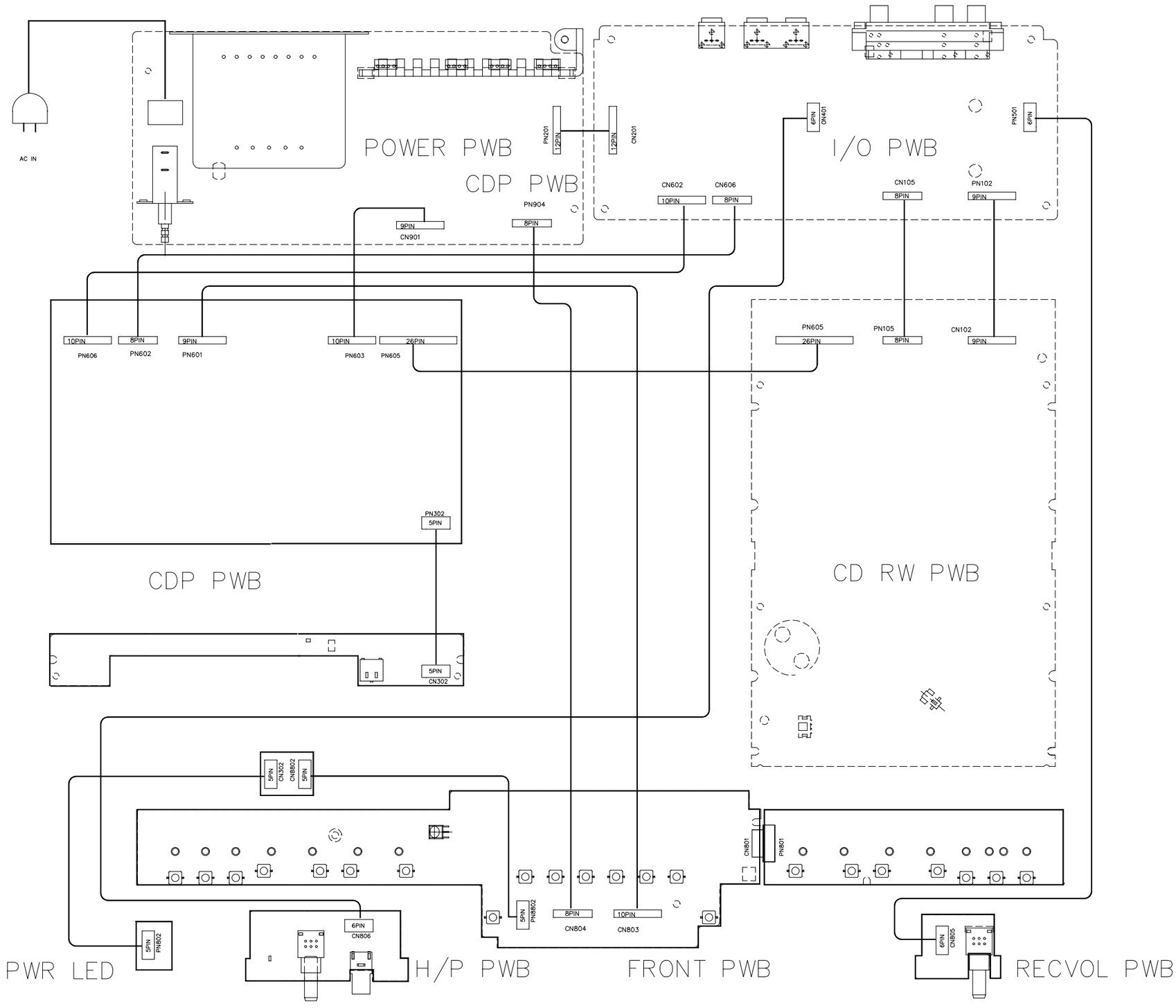
- **CD PLAY SECTION**



- **IO SECTION**


C
D
P
LRCK
DATA
BCLK
BU4053
S/W
POWER
DOWN
MUTE
DEMPH
AK4394
(DAC)
74HC04
BUFFER
COAXIAL
IN (1)
H/P OUT
ANALOG P OUTPUT
ANALOG R OUTPUT
ANALOG INPUT
RELAY
BU4053
S/W
L/R
CDP/CDR
CDP-DOUT
TC4W53
S/W
LRCK
DATA
BCLK
EQ LEVEL
MCK(P)
MCK(R)
CDR-DOUT
C
D
R
W
COAXIAL P OUT
COAXIAL R OUT
COAXIAL IN(2)
OPTICAL P OUT
OPTICAL R OUT
OPTICAL IN
AK5351
(ADC)
BCK
DATA
LRCK
REC
VOL.
F
R
O
N
T

WIRING DIAGRAM



GENERAL UNIT PARTS LIST

Ref. No.	Part No.	Description
		CHASSIS MISCELLANEOUS
	564-036D	PLUG CONTACT CORD,PHONE
	564-036J	CORD DIGIATL 1.5M 1365#30
	6852R-N001A	CORD 1.5M NAMIL REMOTE CONTROL
	255-717A	HEAT SINK DIODE(GSA-PA10/FA-5000)
PT901	6170S-I03AH	TRANSFORMER,POWER
	6850R-GZ20Y	CABLE,FLAT
		ACDR I/O PART P.C. BOARD
		CAPACITORS
C101,106,120,123,127	0CE4766J618	47M SMS 35V M FM(5) TP(5)
C102,104	0CH1102K566	1000PF 50V K X7R(X) 2012 R/TP
C103	0CE4756K618	4.7M SMS 50V M FL TP(5)
C105,108,110,119,122	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C109,239	0CH1103K946	0.01UF 50V Z Y5V(F) 2012 R/TP
C114,115,116,117,131	0CE2266K618	22M SMS 50V M FM5 TP(5)
C118,121,124,125,214	0CH4101K416	100P 50V J NP0 2.0*1.25 R/TP
C126,128,134,135,136	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C129,204,205,209,401	0CE4766J618	47M SMS 35V M FM(5) TP(5)
C130,132,219,240,429	0CH4221K416	220P 50V J 2.0X1.25 R/TP
C133,220,231,425,426	0CE2266K618	22M SMS 50V M FM5 TP(5)
C137,138,139,140,141	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C142,143,144,145,206	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C202,212,411,412,471	0CE1076F618	100M SMS 16V M FM5 TP(5)
C203,218,225,227,416	0CH1821K516	CONDENSER
C207,229,234,238,241	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C208	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C210,211,223,224,408	0CE1076D618	100M SMS 10V M FM5 TP(5)
C213,221,222,415,418	0CH1332K566	3300PF 50V K X7R(X) 2012 R/TP
C217	0CE2276H618	220M SMS 25V FM5 TP(5)
C236,237,427,428	0CQ3921N409	0.0039U 100V J POLY TP
C242,245,402,404,407	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C246,999	0CH1105F946	1UF 16V Z Y5V(F) 2012 R/TP
C247,248,251	0CH4101K416	100P 50V J NP0 2.0*1.25 R/TP
C249	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C250,252	0CH4470K416	47P 50V J NP0 2.0X1.25 R/TP
C405,406	0CE4766J618	47M SMS 35V M FM(5) TP(5)
C409,413,414	0CE1076D618	100M SMS 10V M FM5 TP(5)
C417,419,424	0CH1821K516	CONDENSER
C430	0CH4221K416	220P 50V J 2.0X1.25 R/TP
C472	0CE1076F618	100M SMS 16V M FM5 TP(5)
C473,474	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
		COIL,CHOKE
T101,102	6140R-C001A	T3-300 KWANGSUNG 100UH BULK

Ref. No.	Part No.	Description
	CONNECTOR	
CN105	563-602P	GIL-S/GIL-T 6PIN 60M/M UL1571
CN301	561-640J	GL200-10P-TS P=2.0 HOLDER GSC
CN602	563-602M	GS IL-S10/T10 1571#28 320 28 3
CN606	563-602D	P=2.0 GIL-S08/T08 1571#28 280
PN105	6630S-FB07P	00-6232-016-008-800 ELCO KOREA
PN401	561-711F	*WAFER,G/S GIL-S-06P-S2T2-EF
PN501	561-715F	GIL-G-06P-S3T2-E LG CABLE 6PIN
	DIODE	
D201	0DD202009AG	DAN202U-T107 ROHM-J
	FILTER(CIRC)	
L103,104	6200S-JC01A	HB-1M2012-121JT CERATECH SMD T
	INTEGRATED CIRCUITS	
IC101	657-063A	LTV-817B,PHOTO COUPLER(LITEON)
IC102,103	0IJR456500A	NJM4565M-A,OP-AMP,JRC
IC104,404	0IJR553200A	NJM5532 OP AMP JRC
IC105,401	0IAK439320A	AK4393VF-E2 28SOP TP DAC 1K RE
IC106,107	0IPH740400F	74HCU04D SOT108-1 TP INVERTER
IC108,109,110	0IRH405300A	BU4053BCFV 16P,SSOP TP TRIPLE
IC112	0IAK535120A	AK5351VF-E2 24SOP TP ADC 1K RE
IC115	0ISS791200A	KA7912 ST REGULATOR IC
IC406	0IJR456000B	NJM4560M-TE1-DMP,OP AMP.JRC
	JACK	
JK101	6612S-C008A	PJ6031 PARK ELEC 12YEON ACDR
JK102	6612S-A005A	LGA6502-0150 SMK 2YEON .
JK103,104	6620S-L001A	GP1F32T SHARP OPTICAL H
JK105	6612S-L001A	GP1F32R SHARP AN
	RELAY	
LY402	6920S-0001A	UD2H-1U-5VDC YUYU 5V 40MA 5V 4
	RESISTORS	
R101,102,103,109	0RH0472D622	47 1/10W 5 D.R/TP
R104,236,237,423,429	0RH4700D622	470 1/10W 5 D.R/TP
R105,106,107,108,111	0RH3300D622	330 1/10W 5 D.R/TP
R110,112,113,114,115	0RH4702D622	47K 1/10W 5 D.R/TP
R116,118,119,124,125	0RH1002D622	10K 1/10W 5 D.R/TP
R117,142,257,262,263	0RH1000D622	100 1/10W 5 D.R/TP
R120,121,133,203,229	0RH4701D622	4.7K 1/10W 5 D.R/TP
R126,127,131,138,141	0RH3301D622	3.3K 1/10W 5 D.R/TP
R128,129,226	0RH2701D622	2.7K 1/10W 5 D.R/TP
R130,205,268	0RH3901D622	3.9K 1/10W 5 D.R/TP
R132,134,427,428	0RH2202D622	22K 1/10W 5 D.R/TP
R135,136,143,144,264	0RH0222D622	22 1/10W 5 D.R/TP
R137,140,202,204,211	0RH1001D622	1.0K 1/10W 5 D.R/TP
R145,146,147,218,225	0RH3301D622	3.3K 1/10W 5 D.R/TP
R201,206,402,403,404	0RH1002D622	10K 1/10W 5 D.R/TP
R208,209,215,216,405	0RH1201D622	1.2K 1/10W 5 D.R/TP
R210,213,217,219,407	0RH1501D622	1.5K 1/10W 5 D.R/TP
R212,214,222,223,224	0RH1001D622	1.0K 1/10W 5 D.R/TP

Ref. No.	Part No.	Description
R228,238,239,401,408	0RH1001D622	1.0K 1/10W 5 D.R/TP
R230,231	0RH2201D622	2.2K 1/10W 5 D.R/TP
R249	0RH4701D622	4.7K 1/10W 5 D.R/TP
R251,252,266,267	0RH0682D622	68 1/10W 5 D.R/TP
R254,259	0RH3300D622	330 1/10W 5 D.R/TP
R255,256,258,260,261	0RH3301D622	3.3K 1/10W 5 D.R/TP
R406,415,416	0RH1201D622	1.2K 1/10W 5 D.R/TP
R413,417,421,422,424	0RH1001D622	1.0K 1/10W 5 D.R/TP
R414,419,420	0RH1501D622	1.5K 1/10W 5 D.R/TP
R425,475,478	0RH1001D622	1.0K 1/10W 5 D.R/TP
R430	0RH4700D622	470 1/10W 5 D.R/TP
R451	0RH1002D622	10K 1/10W 5 D.R/TP
R476,477	0RH0222D622	22 1/10W 5 D.R/TP
	TRANSISTOR	
Q201,205,405	0TR103009AF	KRA103M-TP (KRA2203) KEC
Q202,203,206,401,402	0TR319809AC	KTC3198-TP-BL (KTC1815)KEC
Q204,207,208,403,404	0TR130209AA	KTD1302 MUTING TP KEC TO92
Q410,411	0TR319809AC	KTC3198-TP-BL (KTC1815)KEC
	POWER P.C. BOARD	
	CAPACITORS	
C901,902,903,904	0CQ4731N409	0.047U 100V J POLY TP
C905,922	0CE3386H650	3300M SMS 25V M FM7.5
C906,907	0CE688CH650	6800UF SHL 25V M FM7.5 BULK
C908,910,921	0CE4766K618	47M SMS 50V M FM5 TP(5)
C909	0CE1076K618	100UF SMS 50V M FL TP5
C911,912,913,915,916	0CE1076F618	100M SMS 16V M FM5 TP(5)
C919	0CE2256K618	2.2M SMS 50V M FL TP(5)
	CONNECTORS	
CN901	563-602Q	GIL-S/GIL-T 9PIN 60M/M UL1571
PN201	561-644J	52147-1010 K-MOLEX 10PIN 2.0MM
PN901	561-292BAAA	GP390 LGC 3P 3.96 STRAIGHT SN
PN904	561-711HAAA	*WAFER,G/S GIL-S-08P-S2T2-EF
	DIODES	
BD901	0DD604000CB	PBU604(FORMING) BK LITEON 400V
BD902	0DD202000EA	2W02G BK LITEON 200V 2A 60A .S
D901,902,903	0DD352009BA	1SR35-200A T-93X 2K TP ROHM/K
D904	0DD133009AA	1SS133 DETECT,SW TP
D905,906	0DD540200CA	1N5402 BK LITEON DO-201AD 3W 1
ZD901	0DZ330009AH	MTZ33D-T-77 ROHM-K
ZD902,904	0DZ620009AA	MTZ6.2B (TA)
ZD903	0DZ330009CD	MTZJ3.3B TP ROHM-K DO34 0.5W 3
	FUSE & HOLDER	
F901	0FT4001B510	4000MA 250 V 5.2X20 CY/GL ECT
F902,903	0FT2501B510	2.50A 250V 5.2X20 CY/GL
FH901,902,903,904,905	586-008B	FUSE CLIP TP SINSUNG
FH906	586-008B	FUSE CLIP TP SINSUNG
	INTEGRAED CURCUITS	
IC901,902,906	0ISS780500D	KA78R05 TO-220 LD 1A REG

Ref. No.	Part No.	Description
IC903	0ISS781200E	KA78R12 TO-220 LD 1A REGL
IC904	0IKE781200B	KIA7812PI 12V 1A,KEC
IC905	0IKE780500Q	KIA7805API 3P TO-220 ST REGULA
	RESISTORS	
R903,907,908	0RD1002F608	10K 1/6W 5 TA26
R904	0RD1500F608	150 1/6W 5 TA26
R906	0RD1201F608	1.2K 1/6W 5 TA26
R912	0RD2201F608	2.2K 1/6W 5 TA26
R913	0RD5601F608	5.6K 1/6W 5 TA26
	SWITCH	
SW901	6600R-PV01A	SDDL1PASL021 POSTEC UL/CSA 250
	TRANSISTOR	
Q903	0TR127109AA	KTA1271-TP-Y (KTA950)KEC
Q904	0TR103009AF	KRA103M-TP (KRA2203) KEC
Q905	0TR103009AE	KRC103M-TP (KRC1203) KEC
Q906,907	0TR130209AA	KTD1302 MUTING TP KEC TO92
	FRONT P.C. BOARD	
	CAPACITORS	
C801,802,809,810	0CN1040K948	0.1UF 50V Z F TA26 D
C804	0CE1073F638	100M SRE 16V M FM5 TP(5)
C805,806,807	0CN2230H948	0.022M 25V Z F TA26
C811,812,813,814	0CN1010K418	100PF 50V J B TA26
	CONNECTOR	
CN801	6630S-BC02H	B TO B P=1.25 8 PIN, 53045-081
CN803	563-602M	GS IL-S10/T10 1571#28 320 28 3
CN804	563-602D	P=2.0 GIL-S08/T08 1571#28 280
PN801	6630S-BC01H	B TO B P=1.25 8 PIN, 52061-081
PN8802	6630R-BF03E	JE121-05 JAE EUN 5PIN 2.54MM B
	DIGITRON	
FLD801	6302S-V007A	16BT-72GNK FUTABA CDR-600
	INTEGRAED CURCUITS	
IC801,802	0IMA125110A	MN12511 SOP024 TP FLD DRIVE
RMC801	0IRH693840A	RPM6938-V4 3P BK REMOCON MODUL
	LED	
LD801,802,803,804,805	0DL341829AA	SM3418F2T TP AUK GREEN .
LD806,807,808,809,810	0DL341829AA	SM3418F2T TP AUK GREEN .
LD811,812,813,814,815	0DL341829AA	SM3418F2T TP AUK GREEN .
	RESISTORS	
R801,802,808,809,813	0RD2201F608	2.2K 1/6W 5 TA26
R803,810,815	0RD3301F608	3.3K 1/6W 5 TA26
R804,811,816	0RD4701F608	4.7K 1/6W 5 TA26
R805,812,817	0RD5601F608	5.6K 1/6W 5 TA26
R806,818	0RD8201F608	8.2K 1/6W 5 TA26
R807,819	0RD1502F608	15K 1/6W 5 TA26
R814	0RD2201F608	2.2K 1/6W 5 TA26
R820,821,822	0RD1802F608	18K 1/6W 5 TA26
R823,824	0RD1500F608	150 1/6W 5 TA26

Ref. No.	Part No.	Description
R825,826,827,828,829	0RD0182F608	18 1/6W 5 TA26
R830	0RD0182F608	18 1/6W 5 TA26
R831	0RD0332F608	33 1/6W 5 TA26
R832	0RD0822F608	82 1/6W 5 TA26
R833	0RD1000F608	100 1/6W 5 TA26
	SWITCH	
SW801,802,803,804,805	558T026A	EVQ-214 04M MATSUSHITA NON 0V
SW806,807,808,809,810	558T026A	EVQ-214 04M MATSUSHITA NON 0V
SW811,812,813,814,815	558T026A	EVQ-214 04M MATSUSHITA NON 0V
SW816,817,818,819,820	558T026A	EVQ-214 04M MATSUSHITA NON 0V
SW821,822	558T026A	EVQ-214 04M MATSUSHITA NON 0V
	TRANSISTOR	
Q801	0TR102009AE	KRA102M (KRA2202) TP KEC TO
	VOLUME P.C. BOARD	
VR802	6110R-RK01B	VOLUME,ROTARY
	HEADPHONE P.C. BOARD	
	CAPACITORS	
C816	0CN1040K948	0.1UF 50V Z F TA26 D
	CONNECTOR	
CN806	6631R-E006A	IL-S/9073AN 6PIN 400M/M UL2547
J801	563-638E	SPECIAL RING TER. AY 1007#24 G
	DIODE	
ZD801,802	0DZ510009EB	MTZ5.1B 0.5W TP ROHM-K
	JACK	
JK802	572-359J	SOQ4694-01-4101 K-HOSIDEN H=6.
JK801	6612S-C004A	WA6013-35-40 PARK ELEC ORANGE
	VOLUME,ROTARY	
VR801	6110R-RK01A	RK09L12B0-500BX2 J-ALPS D=9 H
	LED P.C. BOARD	
PN802	561-643C	CONNECTOR 52151-0310 3PIN 2.0MM
LED801	0DL325319AA	LED SPR325MVWT31 GREEN/RED
	PLAY P.C. BOARD	
	CAPACITORS	
C101,220,223,514,704	0CH1103K562	10000F 50V K X7R(X) 1508 R/TP
C102,116,119,312,420	0CH8107C621	100UF 6.3V M 85STD(CYL) R/TP
C103	0CH1105D942	1UF 10V Z Y5V(F) 1508 R/TP
C104,106,118,210,213	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C105,120,123,201,203	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C107,108,114,117,204	0CH1105F946	1UF 16V Z Y5V(F) 2012 R/TP
C115,411,601	0CH8476F621	47UF 16V M 6666 R/TP
C121,122,207,211,712	0CH4101K412	100P 50V J COG 1.6X0.8 R/TP
C125,126,127	0CH1222K512	2200PF 50V K B 1608 R/TP
C202	0CH4471K412	470PF 50V J NP0 1508 R/TP
C205,212,301,303,308	0CH1105F946	1UF 16V Z Y5V(F) 2012 R/TP

Ref. No.	Part No.	Description
C206,209,214,224,306	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C208,218	0CH4221K412	220P 50V J COG 1.6X0.8 R/TP
C215,219,414	0CH1473H942	0.0470UF 25V Z Y5V(F) 1608 R/T
C216	0CH4151K412	150P 50V J COG 1.6X0.8 R/TP
C217	0CH1332K562	3300P 50V K X7R 1.6X0.8 R/TP
C221,222	0CH4220K442	22PF 50V J N220 1508 R/TP
C304	0CH8227C621	220000000F 6.3V M 105STD(CYL)
C309,510	0CH1105F946	1UF 16V Z Y5V(F) 2012 R/TP
C310	0CH1122K562	1200P 50V K X7R 1.6X0.8 R/TP
C311,404,417,421,503	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C401,402,403,405,406	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C407,408,409,412,509	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C410	0CH8107F621	100UF 16V M 6666 R/TP
C415,416	0CH1823K946	0.0820UF 50V Z Y5V(F) 2012 R/T
C418	0CH1152K566	1500PF 50V K X7R(X) 2012 R/TP
C419	0CH1683H566	0.0680UF 25V K X7R(X) 2012 R/T
C501,502	0CH4150K472	15PF 50V J N750 1508 R/TP
C504,507,603	0CH8107C621	100UF 6.3V M 85STD(CYL) R/TP
C505,506,508,511,513	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C515,602,701,702,703	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C604	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C705,706,707,708,709	0CH1103K562	10000F 50V K X7R(X) 1508 R/TP
C710,711,716,717,718	0CH1103K562	10000F 50V K X7R(X) 1508 R/TP
C713,714,715,724,725	0CH4101K412	100P 50V J COG 1.6X0.8 R/TP
C719,720,721,722,723	0CH1103K562	10000F 50V K X7R(X) 1508 R/TP
C726,727,728,729	0CH4101K412	100P 50V J COG 1.6X0.8 R/TP
	COIL	
L301,401	6140H-B003G	NLC322522T-100K 10MH TDK
L501	6140H-B003G	NLC322522T-100K 10MH TDK
	CONNECTOR	
PN201	6630R-FB02Q	04-6232-117-008-800 ELCO 17PIN
PN301	6630R-FB02D	04-6232-104-008-800 ELCO 4PIN
PN302	6630R-FB06F	04-6232-106-102-800 ELCO 6PIN
PN401	6630R-FB02M	04-6232-113-008-800 ELCO 13PIN
PN601	6630R3S006E	GT200 LG CABLE 9PIN 2MM STRAIG
PN602	6630R3S006D	GT200 LG CABLE 8PIN 2.0MM STRA
PN603,606	6630R3S006C	GT200 LG CABLE 10PIN 2.0MM STR
PN604	6630R3S006A	GT200 LG CABLE 6PIN 2.0MM STRA
PN605	6630HXC126A	04-6232-126-008-800 ELCO 26PIN
PN609	6630R-FB02F	04-6232-106-008-800 ELCO 6PIN
	DIODE	
D201	0DS121009AA	KDS121 TP KEC UMT 85V 300MA 2A
D502	0DD187009AC	KDS187 CHIP KEC TP KEC
	FILTER(CIRC)	
L203	6140H-A001A	BEAD C,HH-1H4532-121JT.CERATEH
	INTEGRAED CURCUITS	
IC101	0ISO255700A	CXA2557R 48 QFP BK RF
IC102,402,403	0IJR210000A	NJM2100M-TE1-DMP,OP AMP,JRC
IC201	0ISO301110A	CXD3011R-1 144,LQFP BK DSP

Ref. No.	Part No.	Description
IC301	0IMI567880A	M56788FP 42 SSOP TP DRIVE
IC302	0ITO453000C	TC4W53FU SSOP 8PIN
IC401	0ISA119950A	LB11995H-TLM 28P HSOP TP MOTOR
IC501	0IHI643062A	HD64F3062FBL20 FB-100B BK CD-R
IC502	0ITR613002C	XC61AN3002PR(SOT89) 3V 3K/TP
IC601	0IRH393900A	BA3939FP-E2
IC602	0IRH405320A	BU4053BCF-E2 16PIN,SOIC TP TTL
	RESISTORS	
R101,102,103	0RH0222C622	22 1/16W 5 D.R/TP
R104,105,217,402	0RH4702C622	47K 1/16W 5 D.R/TP
R106,108,147,148,554	0RH0000C622	0 1/16W 5 D.R/TP
R113,140,303,428,514	0RH1001C622	1K 1/16W 5 D.R/TP
R114,117,201,213,310	0RH2202C622	22K 1/16W 5 D.R/TP
R115,116,156,157,229	0RH1003C622	100K 1/16W 5 D.R/TP
R122,419,420	0RH3902C622	39K 1/16W J D.R/TP
R124,125,126,127,131	0RH1002C622	10K 1/16W 5 D.R/TP
R130,426	0RH5601C622	5.6K 1/16W 5 D.R/TP
R132,304	0RH2701C622	2.7K 1/16W 5 D.R/TP
R138,141,203,214,224	0RH1002C622	10K 1/16W 5 D.R/TP
R139	0RH3901C622	3.9K 1/16W 5 D.R/TP
R142,222,223,411,412	0RH3301C622	3.3K 1/16W 5 D.R/TP
R146,427,429	0RH2201C622	2.2K 1/16W 5 D.R/TP
R150,151,153,422,525	0RH2702C622	27K 1/16W 5 D.R/TP
R155	0RH6802C622	68K 1/16W 5 D.R/TP
R202,208,216,227,315	0RH3302C622	33K 1/16W 5 D.R/TP
R218,302,308	0RH1503C622	150K 1/16W 5 D.R/TP
R219,566	0RH4703C622	470K 1/16W 5 D.R/TP
R220	0RH1504C622	1.50M 1/16W 5% D R/TP
R221	0RH2203C622	220K 1/16W 5 D.R/TP
R228,421,423,425,523	0RH1002C622	10K 1/16W 5 D.R/TP
R230,231	0RH2200C622	220 1/16W 5 D.R/TP
R232,233,406,407,565	0RH1500C622	150 1/16W 5 D.R/TP
R234,417,524,541,542	0RH4700C622	470 1/16W 5 D.R/TP
R235,236,239,241,242	0RH1000C622	100 1/16W 5 D.R/TP
R237	0RH6800C622	680 1/16W 5 D.R/TP
R301,307	0RH5602C622	56K 1/16W 5 D.R/TP
R305,306,563,564	0RH1003C622	100K 1/16W 5 D.R/TP
R311,314,403,404,405	0RH1000C622	100 1/16W 5 D.R/TP
R312,424	0RH1502C622	15K 1/16W 5 D.R/TP
R313,316,317,418,538	0RH2202C622	22K 1/16W 5 D.R/TP
R408,409,410	0RH0101G622	1 OHM 1 / 4 W 3216 5% D R/TP
R413,414,522,533	0RH3301C622	3.3K 1/16W 5 D.R/TP
R415,416	0RH8201C622	8.2K 1/16W 5 D.R/TP
R501,504,505,506,512	0RH3300C622	330 1/16W 5 D.R/TP
R502,503,507,508,509	0RH1000C622	100 1/16W 5 D.R/TP
R510,536,537,544,547	0RH1000C622	100 1/16W 5 D.R/TP
R513,518,519,520,527	0RH3300C622	330 1/16W 5 D.R/TP
R515,516,517,521	0RH1001C622	1K 1/16W 5 D.R/TP
R526	0RH8202C622	82K 1/16W 5 D.R/TP
R528,534,539,540	0RH1002C622	10K 1/16W 5 D.R/TP

Ref. No.	Part No.	Description
R535,543,545,546,548	0RH3300C622	330 1/16W 5 D.R/TP
R549,550,552,561	0RH3300C622	330 1/16W 5 D.R/TP
R555	0RH0000C622	0 1/16W 5 D.R/TP
R556,601	0RH4701C622	4.7K 1/16W 5 D.R/TP
R557,558,567,568,602	0RH1000C622	100 1/16W 5 D.R/TP
R603,604,605,606,607	0RH1000C622	100 1/16W 5 D.R/TP
	RESONATOR	
X501	6212HA0202A	CSACV20.00MXJ040-TC20 MURATA 2
X201	6212HA3382A	CSACV33.86MX040-TC20 MURATA 33
	TRANSISTOR	
Q101	0TR103709BB	2SA1037K-Q CHIP ROHM-J
Q401,403	0TR130409BA	KTD1304S TP KEC SOT-23 MUTING

REC P.C. BOARD

	CAPACITORS	
C102,656	0CH1105F946	1UF 16V Z Y5V(F) 2012 R/TP
C103,108,923,940	0CH8107F621	100UF 16V M 6666 R/TP
C107	0CH8227C621	220000000F 6.3V M 105STD(CYL)
C109,301,302,303,304	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C111	0CH7476C621	47UF 6.3V M 3528 TP(-)
C112,113,212,216,217	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C114,201,204,213,214	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C117,240,253,305,306	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C202,203	0CH4150K412	15P 50V J COG 1.6X0.8 R/TP
C205,206	0CH4050K012	0.5F 50V C NP0 1508 R/TP
C207	0CH4101K412	100P 50V J COG 1.6X0.8 R/TP
C208,318,324,624	0CH4101K412	100P 50V J COG 1.6X0.8 R/TP
C209,267,401,531,588	0CH7106C611	10UF 6.3V M 3216 TP(-)
C210	0CH1683F562	68000F 16V K X7R(X) 1508 R/TP
C211	0CH1822K562	8200P 50V K X7R 1.6X0.8 R/TP
C215,294,297,331,332	0CH1103K562	10000F 50V K X7R(X) 1508 R/TP
C218,219,220,222,223	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C225,226,227,228,231	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C232,233,234,235,236	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C237,239,264,271,272	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C250,251,252,255,256	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C254,402,522,533,540	0CH7106C611	10UF 6.3V M 3216 TP(-)
C257,283,284,406,408	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C281,282,701,702,760	0CH4220K412	22P 50V J COG 1.6X0.8 R/TP
C291,403,404,409,414	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C307,308,311,312,321	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C309,310,313,314,316	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C315,319,338,339,340	0CH4101K416	100P 50V J NP0 2.0*1.25 R/TP
C317,327,329,657	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C320,322,335,851,852	0CH7106F621	10UF 16V M 3528MM TP(-)
C323,325,334,336,576	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C326,330,559,958	0CH7106F621	10UF 16V M 3528MM TP(-)
C333	0CH7474H611	0.47UF 25V M 3216 TP(-)

Ref. No.	Part No.	Description
C407	0CH1182K562	1800P 50V K X7R 1.6X0.8 R/TP
C415,502,616	0CH4221K412	220P 50V J COG 1.6X0.8 R/TP
C501,503,623,637,640	0CH1105F946	1UF 16V Z Y5V(F) 2012 R/TP
C504,513,514,517,518	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C506,567	0CH1473H942	0.0470UF 25V Z Y5V(F) 1608 R/T
C510	0CH1471K562	470P 50V K X7R 1.6X0.8 R/TP
C511,634,635,636	0CH1224H946	0.2200UF 25V Z Y5V(F) 2012 R/T
C512,563,564,602,606	0CH1103K562	10000F 50V K X7R(X) 1508 R/TP
C515,516,523,560,562	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C519,521,524,526,527	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C525,622,930	0CH1682K562	6800P 50V K X7R 1.6X0.8 R/TP
C529,530	0CH4221K412	220P 50V J COG 1.6X0.8 R/TP
C532,587,601,603,608	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C551,552,553,625,647	0CH1473H942	0.0470UF 25V Z Y5V(F) 1608 R/T
C557,565,574	0CH1472K562	4700F 50V K X7R(X) 1508 R/TP
C566	0CH1474H946	0.4700UF 25V Z Y5V(F) 2012 R/T
C569,583,592,595,596	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C571,585	0CH1222K562	2200F 50V K X7R(X) 1508 R/TP
C577,578	0CH1104K946	0.1UF 50V Z Y5V(F) 2012 R/TP
C591,906,907	0CH1332K562	3300P 50V K X7R 1.6X0.8 R/TP
C597,611,630,661,696	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C598,613,617,628,655	0CH7106C611	10UF 6.3V M 3216 TP(-)
C599	0CH4151K412	150P 50V J COG 1.6X0.8 R/TP
C604	0CH4331K412	330P 50V J COG 1.6X0.8 R/TP
C607,615,618,662,664	0CH7106C611	10UF 6.3V M 3216 TP(-)
C609,651,671,678,682	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C612,642	0CH4331K412	330P 50V J COG 1.6X0.8 R/TP
C614	0CH4070K112	7P 50V D COG 1.6X0.8 R/TP
C619,620,621	0CH1224H946	0.2200UF 25V Z Y5V(F) 2012 R/T
C626	0CH1333K562	0.033UF 50V K X7R(X) 1508 R/TP
C631,632,654,705,706	0CH1103K562	10000F 50V K X7R(X) 1508 R/TP
C633,638	0CH1474H946	0.4700UF 25V Z Y5V(F) 2012 R/T
C639	0CH1681K562	680P 50V K X7R 1.6X0.8 R/TP
C644	0CH4100K172	10P 50V D N750 1.6X0.8 R/TP
C650	0CH7476C621	47UF 6.3V M 3528 TP(-)
C663,695,865	0CH7106C611	10UF 6.3V M 3216 TP(-)
C672,673,676,857,858	0CH7106C611	10UF 6.3V M 3216 TP(-)
C685,691,692,707,709	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C686,687,688	0CH1102K562	4.6566128752458E-007F 50V K X7
C697,710,855,856,903	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C703,704	0CH4470K442	47PF 50V J N220 1508 R/TP
C711,712,770,861,862	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C761	0CH4100K172	10P 50V D N750 1.6X0.8 R/TP
C859,860,918,932,934	0CH7106C611	10UF 6.3V M 3216 TP(-)
C863,922,926,927,953	0CH7106F621	10UF 16V M 3528MM TP(-)
C864,901	0CH1103K562	10000F 50V K X7R(X) 1508 R/TP
C902,904	0CH1103K562	10000F 50V K X7R(X) 1508 R/TP
C917,928,935,937,952	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C929,933,941,942	0CH1104K942	0.1UF 50V Z Y5V(F) 1508 R/TP
C936	0CH1682K562	6800P 50V K X7R 1.6X0.8 R/TP

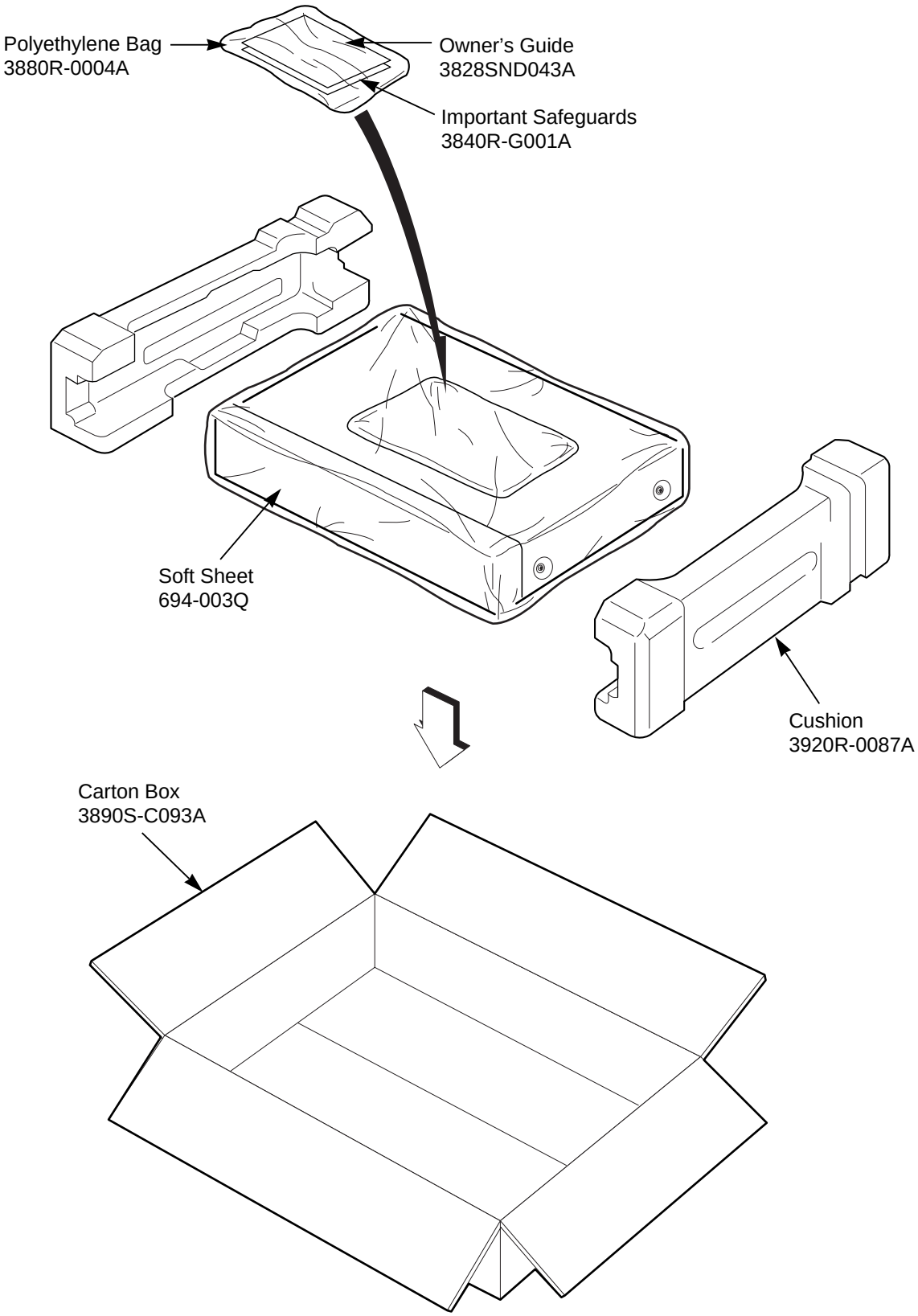
Ref. No.	Part No.	Description
C957,963,964,965,966	0CH1104H942	0.1000UF 25V Z Y5V(F) 1508 R/T
C959	0CH4330K442	33PF 50V J N220 1508 R/TP
C960,979	0CH7106F621	10UF 16V M 3528MM TP(-)
	COIL	
L306,308,601	6140H-B003G	NLC322522T-100K 10MH TDK
L302,304,401,502,504	6140H-B003G	NLC322522T-100K 10MH TDK
L505,602,901	6140H-B003G	NLC322522T-100K 10MH TDK
	CONNECTOR	
CN101	561-712D	*WAFER GS GO;-S-04P-S2L2-EF
CN102	6630R-FB02P	04-6232-116-008-800 ELCO 16PIN
CN502	6630R-FB02K	04-6232-111-008-800 ELCO 11PIN
CN601	6630HXE232A	52559-3292 MOLEX 32PIN 0.5MM S
CN901	6630R-FB02H	04-6232-108-008-800 ELCO 8PIN
PN105	6630R3S006A	GT200 LG CABLE 6PIN 2.0MM STRA
PN201	6630R3S006A	GT200 LG CABLE 6PIN 2.0MM STRA
PN605	6630HXC126A	04-6232-126-008-800 ELCO 26PIN
	DIODE	
D101,504,701,702	0DD187009AC	KDS187 CHIP KEC TP KEC
D203	0DS121009AA	KDS121 TP KEC UMT 85V 300MA 2A
D602,603,604	0DD187009AC	KDS187 CHIP KEC TP KEC
	FILTER(CIRC)	
L103,113	6140H-A001A	BEAD C,HH-1H4532-121JT.CERATEH
L301	6140H-A001A	BEAD C,HH-1H4532-121JT.CERATEH
L604	6200S-JC01A	HB-1M2012-121JT CERATECH SMD T
	INTEGRAED CURCUITS	
IC101	0ITR613002C	XC61AN3002PR(SOT89) 3V 3K/TP
IC102	0IRH033000A	BA033SFP P/MOLD-5 TP REGULATOR
IC201	0IAL936610B	AT93C66-10SC 8PSOIC TP EEPROM
IC202	0IHI643062A	HD64F3062FBL20 FB-100B BK CD-R
IC204,205	0IFA743770D	74AC377MTCX 20TSSOP TP OCT D-F
IC208,607,907	0ITO453000C	TC4W53FU SSOP 8PIN
IC209	0IRI580800A	RL5E808 176 LQFP BK CD-RW CONT
IC210	0IGS711816P	GM71C18163C TSOP2 TP 5V 60N 1M
IC211,405	0INS740400Y	74VHC04MTCX 14TSSOP TP HEX INV
IC212,555,761,854	0ITO453000C	TC4W53FU SSOP 8PIN
IC213	0INS704500C	NC7SZ04M5X 5P SOT23-5 TP INVER
IC214	0ITO704000A	TC7S04F INVERTER(GE85L)
IC301	0IXL103144A	XCS10-3TQ144C 144QFP BK FPGA
IC302	0IWI242573A	W24257AS-35 (TAPE&REEL) 1K/TP
IC303,507	0ITO704000A	TC7S04F INVERTER(GE85L)
IC304,305	0IRH405320A	BU4053BCF-E2 16PIN,SOIC TP TTL
IC306	0ICB842000A	CS8420-CS 28L SOIC TP DIGITAL
IC307	0IRH405300A	BU4053BCFV 16P,SSOP TP TRIPLE
IC401,404,407	0INS740800P	74VHC08MTCX 14TSSOP TP QUAD 2-
IC402	0ITO786000C	TC7SH86F SSOP 5P TP EX-OR GATE
IC403,553,603	0IRH405300A	BU4053BCFV 16P,SSOP TP TRIPLE
IC406,609,905	0INS786500A	NC7SZ86M5X 5P SOT23-5 TP 2-INP
IC409	0INS743200S	74VHC32MTCX 14TSSOP TP QUAD 2-
IC501	0ISO301110A	CXD3011R-1 144,LQFP BK DSP
IC503	0IMI623520B	M62352GP 20P SSOP TP 8BITS 12C

Ref. No.	Part No.	Description
IC506,614	0ITO466000F	TC4W66FU SSOP8-P TP DUAL S/W
IC551	0ISA119950A	LB11995H-TLM 28P HSOP TP MOTOR
IC552,610,910	0IJR340300A	NJM3403AV-TE1 OP AMP
IC556	0IJR210000B	NJM2100V DUAL OP AMP,JRC
IC601	0IAK856300A	AK8563 80,LQFP BK ANALOG SIGSA
IC604	0IET224500A	EL2245CS SO8 TP ALPC 2CH OP AM
IC605	0IRH406600A	BU4066BCFV. 14P,SSOP TP QUAD A
IC608,702,912	0IJR341400C	NJM3414AM-TE1,3K/REEL. JRC
IC617,703,904	0IJR290300D	NJM2903V-TE1 8P SSOP TP COMPAR
IC701,903	0IJR340300A	NJM3403AV-TE1 OP AMP
IC760	0ITO708000D	TC7W08FUDUAL 2 INPUT AND GATE
IC851	0IRH393900A	BA3939FP-E2
IC852,853,913	0IJR341400C	NJM3414AM-TE1,3K/REEL. JRC
IC901	0ISA654300A	LA6543M-TLM MFP-36S-LF TP 4CH
IC902,909	0IJR780800C	NJM7808DLA 3 TP REGULATOR
IC908	0ITO466000F	TC4W66FU SSOP8-P TP DUAL S/W
	INDUCTOR	
L501	0LCZB00005A	HB-1M1608-601JT CERATECH 600 O
	RESISTORS	
R101	0RH8202C622	82K 1/16W 5 D.R/TP
R102,238,417,580,611	0RH0000C622	0 1/16W 5 D.R/TP
R103,711	0RH2702C622	27K 1/16W 5 D.R/TP
R106,221,222,234,235	0RH1002C622	10K 1/16W 5 D.R/TP
R110,111,113,114,226	0RH1000C622	100 1/16W 5 D.R/TP
R112,202,229,245,246	0RH1000C622	100 1/16W 5 D.R/TP
R118,252,276,334,574	0RH4701C622	4.7K 1/16W 5 D.R/TP
R201,525,533	0RH1001C622	1K 1/16W 5 D.R/TP
R203,367,401,414,521	0RH1001C622	1K 1/16W 5 D.R/TP
R204,258,410,415,549	0RH0000C622	0 1/16W 5 D.R/TP
R205,380	0RH1500C622	150 1/16W 5 D.R/TP
R206,516,517,550	0RH0472C622	47 1/16W 5 D.R/TP
R209,331,581,587,625	0RH4701C622	4.7K 1/16W 5 D.R/TP
R210,270,271,509,534	0RH1002C622	10K 1/16W 5 D.R/TP
R211,375	0RH3300C622	330 1/16W 5 D.R/TP
R223,224	0RH4700C622	470 1/16W 5 D.R/TP
R227,228,230,231,232	0RH1000C622	100 1/16W 5 D.R/TP
R233,236,237,241,242	0RH1000C622	100 1/16W 5 D.R/TP
R239,240	0RH6800C622	680 1/16W 5 D.R/TP
R244	0RH3001C622	3K 1/16W 5% D R/TP
R249,250,251,504,528	0RH4703C622	470K 1/16W 5 D.R/TP
R253,254,293,320,321	0RH1002C622	10K 1/16W 5 D.R/TP
R255,263,266,267,269	0RH1000C622	100 1/16W 5 D.R/TP
R257,621,678,683,728	0RH1004C622	1M 1/16W 5 D.R/TP
R260,261,262,294,376	0RH1000C622	100 1/16W 5 D.R/TP
R274,277,355,530,539	0RH4702C622	47K 1/16W 5 D.R/TP
R279,280,514,729,909	0RH2202C622	22K 1/16W 5 D.R/TP
R283,285,286,287,288	0RH1000C622	100 1/16W 5 D.R/TP
R289,290,295,310,335	0RH1000C622	100 1/16W 5 D.R/TP
R306,307,308	0RH2200C622	220 1/16W 5 D.R/TP
R311,322,364,365,373	0RH2200C622	220 1/16W 5 D.R/TP
R323	0RH6800C622	680 1/16W 5 D.R/TP
R327,332,333,379,503	0RH1002C622	10K 1/16W 5 D.R/TP

Ref. No.	Part No.	Description
R337,338,339,340,341	0RH1000C622	100 1/16W 5 D.R/TP
R342,343,344,345,346	0RH1000C622	100 1/16W 5 D.R/TP
R347,348,349,350,351	0RH1000C622	100 1/16W 5 D.R/TP
R352,353,354,356,357	0RH1000C622	100 1/16W 5 D.R/TP
R358,359,360,361,362	0RH1000C622	100 1/16W 5 D.R/TP
R363,368,369,370,416	0RH1000C622	100 1/16W 5 D.R/TP
R366	0RH3300C622	330 1/16W 5 D.R/TP
R371	0RH1801C622	1.8K 1/16W 5 D.R/TP
R372,381	0RH1504C622	1.50M 1/16W 5% D R/TP
R374	0RH2200C622	220 1/16W 5 D.R/TP
R377,378,496,497,590	0RH1000C622	100 1/16W 5 D.R/TP
R402,569,638,903,904	0RH1003C622	100K 1/16W 5 D.R/TP
R505	0RH1504C622	1.50M 1/16W 5% D R/TP
R506,667,669	0RH2203C622	220K 1/16W 5 D.R/TP
R507,508,712	0RH3301C622	3.3K 1/16W 5 D.R/TP
R511,513,564,573,663	0RH1003C622	100K 1/16W 5 D.R/TP
R512,583,588,606,610	0RH1002C622	10K 1/16W 5 D.R/TP
R519,527,537,664,665	0RH2202C622	22K 1/16W 5 D.R/TP
R520,522,531,557,577	0RH4702C622	47K 1/16W 5 D.R/TP
R523,543,602,603,636	0RH1001C622	1K 1/16W 5 D.R/TP
R524,578,579,622	0RH1002C422	10K 1/16W 1% D R/TP
R529,565,595,596,626	0RH1000C622	100 1/16W 5 D.R/TP
R532,567,576,720,724	0RH3302C622	33K 1/16W 5 D.R/TP
R535,601,627,628,631	0RH1002C622	10K 1/16W 5 D.R/TP
R536,982,985	0RH3302C622	33K 1/16W 5 D.R/TP
R538,675	0RH2201C622	2.2K 1/16W 5 D.R/TP
R540,541,575,584,597	0RH4702C622	47K 1/16W 5 D.R/TP
R542,604	0RH1501C622	1.5K 1/16W 5 D.R/TP
R544,548,582,731	0RH1002C422	10K 1/16W 1% D R/TP
R545	0RH1203C422	120KOHM 1 / 16 W 1608 1% D R/T
R546	0RH3902C422	39K OHM 1/16W 1608 1% D R/TP
R547	0RH2202C422	22K 1/16W 1% D R/TP
R551,552	0RH1500C622	150 1/16W 5 D.R/TP
R553,554,555	0RH0101G622	1 OHM 1 / 4 W 3216 5% D R/TP
R559,560,568,593,618	0RH0000C622	0 1/16W 5 D.R/TP
R561,988	0RH1502C622	15K 1/16W 5 D.R/TP
R562,861,863,981,983	0RH6802C622	68K 1/16W 5 D.R/TP
R563	0RH2703C622	270K 1/16W 5 D.R/TP
R586,589	0RH3301C622	3.3K 1/16W 5 D.R/TP
R591,592,598,612,661	0RH1000C622	100 1/16W 5 D.R/TP
R594	0RH7501C422	7.5K OHM 1 / 16 W 1608 1% D R/
R613,655,657,722,996	0RH4702C622	47K 1/16W 5 D.R/TP
R614,867	0RH6801C422	6.80K 1/16W 1% D R/TP
R616	0RH4700C622	470 1/16W 5 D.R/TP
R617,974	0RH6801C622	6.8K 1/16W 5 D.R/TP
R623	0RH4701C422	4.7K OHM 1 / 16 W 1608 1% D R/
R624,658,662,693,990	0RH1002C622	10K 1/16W 5 D.R/TP
R632,654,709,717,718	0RH1002C622	10K 1/16W 5 D.R/TP
R635,646,647,650,674	0RH0000C622	0 1/16W 5 D.R/TP
R639,758	0RH2701C622	2.7K 1/16W 5 D.R/TP
R640	0RH2701C622	2.7K 1/16W 5 D.R/TP
R641,643,644,645	0RH4702C622	47K 1/16W 5 D.R/TP
R642,690	0RH5600C622	560 1/16W 5 D.R/TP

Ref. No.	Part No.	Description
R649,651,668,679,684	0RH1000C622	100 1/16W 5 D.R/TP
R670,686,687,998	0RH0000C622	0 1/16W 5 D.R/TP
R677,694,864,971,972	0RH0000C622	0 1/16W 5 D.R/TP
R692,696,697	0RH1001C422	1K 1/16W 1% D R/TP
R701,702,703,704	0RH6801C622	6.8K 1/16W 5 D.R/TP
R705,706,707,708	0RH1802C622	18K 1/16W 5 D.R/TP
R710,906,925,975	0RH2201C622	2.2K 1/16W 5 D.R/TP
R713,714	0RH1802C622	18K 1/16W 5 D.R/TP
R715,716	0RH6802C622	68K 1/16W 5 D.R/TP
R719,725,901,902,918	0RH1002C622	10K 1/16W 5 D.R/TP
R723	0RH1502C622	15K 1/16W 5 D.R/TP
R726,727,851,917,922	0RH4701C622	4.7K 1/16W 5 D.R/TP
R730,751,752,753	0RH1000C622	100 1/16W 5 D.R/TP
R732	0RH8200C422	820 OHM 1/16W 1608 1% D R/TP
R754,961	0RH1003C622	100K 1/16W 5 D.R/TP
R755	0RH5602C622	56K 1/16W 5 D.R/TP
R756	0RH3302C622	33K 1/16W 5 D.R/TP
R760	0RH7502C622	75K 1/16W 5 D.R/TP
R761	0RH2703C622	270K 1/16W 5 D.R/TP
R854,855,856,857	0RH2701C422	2.70K 1/16W 1% D R/TP
R862,916,923	0RH1004C622	1M 1/16W 5 D.R/TP
R907,908,927,928	0RH1203C622	120K 1/16W 5 D.R/TP
R910,930	0RH8201C622	8.2K 1/16W 5 D.R/TP
R911,915,924,929,931	0RH2202C622	22K 1/16W 5 D.R/TP
R912,932	0RH1001C622	1K 1/16W 5 D.R/TP
R919,976,978	0RH1002C622	10K 1/16W 5 D.R/TP
R920,921,960	0RH1003C622	100K 1/16W 5 D.R/TP
R933	0RH3303C622	330K 1/16W 5 D.R/TP
R934,935	0RH3902C622	39K 1/16W J D.R/TP
R936	0RH4703C622	470K 1/16W 5 D.R/TP
R966,967,968,969	0RH0102C622	10 1/16W 5 D.R/TP
R977	0RH4701C622	4.7K 1/16W 5 D.R/TP
R984,986	0RH6802C622	68K 1/16W 5 D.R/TP
R987,989,991,993	0RH0000C622	0 1/16W 5 D.R/TP
R994	0RH1002C622	10K 1/16W 5 D.R/TP
R997	0RH4702C622	47K 1/16W 5 D.R/TP
	RESONATOR	
X201	6212HA0202A	CSACV20.00MXJ040-TC20 MURATA 2
X202	6212HA3452B	CSACV34.57MXJ040-TC20 MURATA 3
X501	6212HA3382A	CSACV33.86MX040-TC20 MURATA 33
	SWITCH	
SW303	6600HXF101A	SPVF21001A ALPS . 5V 1MAV 4.65
	TRANSISTOR	
Q302,502,602,606	0TR144009AH	DTC144EK CHIP ROHM-J
Q503,607,608	0TR144009AH	DTC144EK CHIP ROHM-J
Q605	0TR144009AI	DTA144EK CHIP ROHM-J
	TRANSISTOR	
Q302,502,602,606	0TR144009AH	DTC144EK CHIP ROHM-J
Q503,607,608	0TR144009AH	DTC144EK CHIP ROHM-J
Q605	0TR144009AI	DTA144EK CHIP ROHM-J

PACKAGE


Polyethylene Bag
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Owner's Guide
3828SND043A
Important Safeguards
3840R-G001A
Soft Sheet
694-003Q
Cushion
3920R-0087A
Carton Box
3890S-C093A